Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 10,0c
1. Edition

En

Testoil-ISO 4113

PES 8 MW 100/720 RS 1019 RQV 500-1200 MW 29
0 403 448 106

supersedes
company: Perkins
engine: TV 8.640 6R
185 kW (252 PS)

1 - 8 - 7 - 5 - 4 - 3 - 6 - 2
0 - 45 - 90 - 135 - 180 - 225 - 270 - 315 ± 0,05(0,75)
+ Port-closing mark on rear side

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	12,2+0,1	9,9 - 10,1	0,35(0,6)			
500	5,8-6,0	0,95 - 1,35	0,35(0,55)			
800	12,2+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 14	500	5,8-6,0		
	1400	0,1-1,0					100	min.7,5		
ca.64	11,2	1220-1225					660-720 = 2,0			
	4,0	1255-1260				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1180	99,0-101,0	1220 - 1225+	800	93,0-97,0	100	19,0-21,0RW		
	(97,0-103,0)			(91,0-99,0)		min.140,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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A1

AA

Port closing and TDC markings

Comb. - No.	°camshaft between port closing and TDC at control-rod travel 10,5 mm
... 106	15°

Test Specifications Fuel Injection Pumps and Governors

(1) TPP 001/4 VOL 4,5 e

1. Edition

En

Test-Oil-ISO 4113

PES 4 MW 100/320 RS 1102 RQV 300-1100 MW 39-5
0 403 444 107

supersedes
company Volvo
engine D 45
85 kW

1-3 - 4 - 2
0-90-180-270 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) bei RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1+0,1	11,3-115	0,35(0,6)			
300	5,8-5,9	1,3-1,7	0,35(0,55)			
1000	12,1+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200 1350	15,2-17,8 0 - 1,0				ca.10	300 100	5,6-5,7 min. 8,1		
ca. 43	11,1 4,0	1140-1150 1210-1240				(3a)	320-650			

Torque control travel a = · mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
700	113,0-115,0 (111,0-117,0)	1140-1150*	1000	112,0-116,0 (110,0-118,0)	100	19,0-21,0 mm RW 130,0-140,0 (127,0-143,0)		
					300	13,0-17,0 (10,5-19,5)		
					100-220 (80-250)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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A3

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 VOL 4,5 g

1. Edition

En

Testoil-ISO 4113

PES 4 MW 100/320 RS 1102
RSV 300-1000 MW 1 A 315

0 403 474 001

supersedes -
company Volvo
engine TD 45
84 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) bei RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1+0,1	11,3-11,5	0,35(0,6)			
300	5,6-5,7	1,3-1,7	0,35(0,55)			
1000	12,1+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.12	300	5,1-5,2		
							300	5,6-5,7		
ca.52 (2a)	11,1	1040-1050					360-420	=2,0		
	4,0	1055-1085								
	0,3-1,7	1200								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	113,0-115,0 (111,0-117,0)	1040-1050*	1000	112,0-116,0 (110,0-118,0)	300	13,0-17,0 (10,5-19,5)	300	5,6-5,7

Checking values in brackets

* 1 mm less control rod travel than col 2

A4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 13,4 a

1. Edition

En

PE 8 MW 100/720 LS 1118
RQV 300-1150 MW 56

0 403 548 007

1- 8- 7- 2 - 6 - 5 - 4 - 3
0-45-90-135-180-225-270-315 ± 0,50 (0,75)

supersedes
company KHD
engine BF 8 L 513
222 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	13,3-13,5	0,35(0,6)			
300	6,7-6,8	1,6-2,0	0,35(0,55)			
1150	11,9+0,1		0,5 (0,7)			
450	11,4+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min / Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1175 1400	15,2-17,8 0-1				ca. 18	300	6,7-6,8		
ca. 55	10,9 4,0	1190-1200 1270-1300					320-460			

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,8 bar 133,0-135,0 (131,0-137,0)	1190-1200*	LDA 1150	0,8 bar 129,0-131,0 (126,0-134,0)	100	19,0-21,0 mm RW 140-150	1000 750 900	11,9+0, 12,5+0, 12,1+0,2
			LDA 450	0 bar 104,0-106,0 (102,0-108,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

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BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
Pump LS 1118 with MW 56	0,8	 0,36 0,26 0	12,5-12,6 12,2-12,3 11,6-11,7 11,4-11,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,8 e
7. Edition
En

PE 6 P 100 A 720 RS 15 RQ 250/1100 PA 269 R (1)
PA 278 R* (2)

Komb.-Nr. 0 401 846 329 (1)
0 401 846 331 (2)

supersedes 3.83
company: Daimler-Benz
engine OM 355

* 278 R -
Functional check of roll-start block: Adjust solenoid until control rod is 1;5-2,5 mm from stop.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0+0,1	11,9-12,1	0,3(0,6)			
250	7,4-7,6	1,7-2,3	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	12,0 4,0 1350	1125-1145 1195-1230 0-1,5	250	6,0	100 250 385-425	min.7,0 5,9-6,1 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1125-1145 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	118,5-120,5 (116,5-122,5)	450	450	101,0-105,0 (99,0-107,0)	100	140,0-160,0 (136,0-164,0)

Checking values in brackets

5.84

A7

A7

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 36,6 a

1. Edition

En

PE 8 P 100/900/5 RS 114 (1)
PE 8 P 100/900/5 RS 115 (2)
PE 8 P 100/920/5 RS 115 RSUV 300-750 P 9/322 R (3)
Cam sequence and angular cam spacing, Instructions 2
Note VDT-I-401/ 103

supersedes
company KHD
Komb.-Nr. F 16 M 716
Engine 0 401 818 006 (1)
0 401 818 008 (2)
0 401 878 033 (3)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2.0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	750	16,0		ca. 31	300	8,0	730	0
	770	12,5					400	0
	800	6,2	without auxoliary spring		60	19-21	320	1,2-1,8
					300	7,7-8,3		
	785	7,4-10,4			350	4,6-6,2		
(2a)	800	4,8-7,8	with auxiliary spring		470	0		
	820	1,8-4,8						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop: Test oil temp 40°C (104° F) rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Pumps run in tandem Take full-load delivery from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

Cam sequence and angular cam spacing.

PE 8 P..RS 114:

1- 8- 4- 7- 3 - 6 - 5 - 2
0-30-75-90-135-165-225-300° ± 0,5° (± 0,75°)

PE 8 P..RS 115:

1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)

A9

A9

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 KHD 36,6 a 1

1. Edition

En

PE 8 P 100 A 900/5 RS 114 (1)
PE 8 P 100 A 920/5 RS 115 RSUV 300-750 P 9/322 R (2)

supersedes -
company KHD
engine F 16 M 716

Cam sequence and angular cam spacing, Instructions 2
Note VDT-I-401/ 103

Komb.-Nr. 0 401 818 011 (1)
0 401 878 046 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	750	16,0	without auxoliary spring	ca. 31	300	8,0	730	0
	770	12,5					400	0
	800	6,2			60	19-21	320	1,2-1,8
					300	7,7-8,3		
	785	7,4-10,4			350	4,6-6,2		
(2a)	800	4,8-7,8	with auxiliary spring		470	0		
	820	1,8-4,8						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump without and with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Pumps run in tandem Take full-load delivery from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A10

A10

Cam sequence and angular cam spacing.

PE 8 P..RS 114:

1- 8- 4- 7- 3 - 6 - 5 - 2
0-30-75-90-135-165-225-300° ± 0,5° (± 0,75°)

PE 8 P..RS 115:

1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)

A11

AAA

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 36,6 a 3

1. Edition

En

PE 8 P 110 A 900/5 RS 114 (1)
PE 8 P 110 A 920/5 RS 115 RSUV 300-750 P 9 A 322 R (2)
Values only apply to test nozzle-and-holder assembly 0 681 443 022 and fuel-injection test tubing 1 680 750 060

supersedes company KHD F 16 M 716

Komb.-Nr. 0 401 818 012 (1)
0 401 878 077 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Cam sequence and angular cam spacing, Instructions 2

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	18,8-19,6	0,8			
600	6,0	3,4-4,4				
600	12,0	18,2-19,5				
600	15,0	26,7-28,4				
200	6,0	0,9-1,9				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	750	16,0		ca. 31	300	8,0	730	0
	770	12,5					400	0
	800	6,2	without auxoliary spring		50	19-21	320	1,2-1,8
					300	7,7-8,3		
	785	7,4-10,4			350	1,4-4,2		
(2a)	800	4,8-7,8	with auxiliary spring		400	0-1,0		
	820	1,8-4,8						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Pumps run in tandem Take full-load delivery from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A12

Cam sequence and angular spacing:

PE 8 P..RS 114:

1- 8- 4- 7- 3 - 6 - 5 - 2
0-30-75-90-135-165-225-300° ± 0,5° (± 0,75)

PE 8 P..RS 115:

1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° ±0,5° (± 0,75°)

Note VDT-I-401/103!

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 36,6 a 4

1. Edition

En

PE 8 P 110 A 920/5 RS 115 RSUV 300-750 P 9/322 R
1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)

supersedes-
company KHD
engine F 16 M 716

Values only apply to test nozzle-and-holder assembly 0 681 443 022 and fuel-injection test tubing 1 680 750 060

Komb.-Nr. 0 401 878 080
Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	18,4-19,6	0,8			
600	6,0	3,4-4,4				
600	12,0	18,2-19,5				
600	15,0	26,7-28,4				
200	6,0	0,9-1,9				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.68	750 16,0 770 12,5 800 6,2					ca. 31	300	8,0	730 400 320	0 0 1,2-1,8
			without auxoliary spring				50 300	19-21 7,7-8,3		
(2a)	785 7,4-10,4 800 4,8-7,8 820 1,8-4,8		with auxiliary spring				350 400	1,4-4,2 0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
Pump runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 818 012 Take full-load delivery from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 36,6 b

1. Edition

En

PE 8 P 100/920/5 RS 115 RSUV 300-900 PO/327R
Komb.-Nr. 0 401 878 036
1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)
Note VDT-I-401/ 103

supersedes -
company KHD
engine F 16 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
ca. 65	900	16,0	without auxoliary spring	ca. 23	300	8,0	880	0
	930	10,5					500	0
	950	6,0			70	19-21	330	1,2-1,8
(2a)	930	9,5-12,0	with auxiliary spring		300	7,7-8,3		
	960	4,2-6,7			350	3,5-5,5		
	1050	0-1,0			440	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Pump runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 818 006 Take full-load delivery from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

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AA5

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 36,6 b 1
1. Edition
En

PE 8 P 100 A 920/5 RS 115 RSUV 300-900 PO/327R
Komb.-Nr. 0 401 878 047
1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)
Note VDT-I-401/ 103

supersedes –
company KHD
engine F 16 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testing

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 65	900 16,0 930 10,5 950 6,0		without auxoliary spring			ca. 23	300	8,0	880 500 330	0 0 1,2-1,8
(2a)	930 9,5-12,0 960 4,2-6,7 1050 0-1,0		with auxiliary spring				70 300 350 440	19-21 7,7-8,3 3,5-5,5 0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40° C (104° F)		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
Pump runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 818 011 Take full-load delivery from VDT-I-401/103					–	–	–	–

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 36,6 c

1. Edition

En

PE 8 P 100/920/5 RS 115 RSUV 300-600 P 8/322 R
Komb.-Nr. 0 401 878 041
1- 5- 4 - 3 - 8 - 7 - 2 - 6
0-45-75 -135-210-270-300-345° ± 0,5° (± 0,75°)
Note VDT-I-401/ 103

supersedes -
company KHD
engine F 16 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 68	600	16,0	without auxoliary spring	ca. 34	300	8,0	580	0
	620	10,4					350	0
	635	6,0			60	19-21	320	1,2-1,8
	620	9,0-10,6	with auxiliary spring		300	7,7-8,3		
(2a)	650	2,0-4,8			320	4,5-6,3		
	690	0-1,0			360	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Pump runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 8 8 006 Take full-load delivery from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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Test Specifications Fuel Injection Pumps and Governors (1A)

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WPP 001/4 KHD 36,6 c 1

1. Edition

En

PE 8 P 100 A 920/5 RS 115 RSUV 300-600 P 8/322 R
Komb.-Nr. 0 401 878 048
1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)
Note VDT-I-401/ 103

supersedes -
company KHD
engine F 16 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	600	16,0		ca. 34	300	8,0	580	0
	620	10,4	without auxoliary spring		60	19-21	350	0
	635	6,0			300	7,7-8,3	320	1,2-1,8
	620	9,0-10,6			320	4,5-6,3		
(2a)	650	2,0-4,8	with auxiliary spring		360	0-1,0		
	690	0-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Pump runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 818 011 Take full-load delivery from VDT-I-401/103								-

Checking values in brackets

* 1 mm less control rod travel than col 2

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BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 36,6 c 2

1. Edition

PE 8 P 100 A 920/5 RS 115 RSUV 300-600 P 8 A 322 R En
Komb.-Nr. 0 401 878 088
1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)
Note VDT-I-401/ 103

supersedes -
company KHD
engine F 16 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	600	16,0		ca. 34	300	8,0	580	0
	620	10,4	without auxoliary spring		60	19-21	350	0
	635	6,0			300	7,7-8,3	320	1,2-1,8
	620	9,0-10,6			320	4,5-6,3		
(2a)	650	2,0-4,8	with auxiliary spring		360	0-1,0		
	690	0-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Pump runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 818 011 Take full-load delivery from VDT-I-401/103								-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 36,6 a 2

1. Edition

En

PE 8 P 100 A 920/5 RS 115 RSUV 300-750 P 9 A 322 R
Komb.-Nr. 0 401 878 069
1 - 5- 4- 3 - 8 - 7 - 2 - 6
0 -45-75-135-210-270-300-345° ± 0,5° (± 0,75°)
Note VDT-I-401/ 103

supersedes
company KHD
engine F 16 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 68	750	16,0		ca. 31	300	8,0	730	0
	770	12,5					400	0
	800	6,2	without auxoliary spring		60	19-21	320	1,2-1,8
					300	7,7-8,3		
	785	7,4-10,4			350	4,6-6,2		
(2a)	800	4,8-7,8	with auxiliary spring		470	0		
	820	1,8-4,8						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Pump runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 818 011 Take full-load delivery from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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A20

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 36,6 b 2
1. Edition
En

PE 8 P 100 A 920/5 RS 115 RSUV 300-900 POA 327 R
Komb.-Nr. 0 401 878 070
1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)
Note VDT-I-401/ 103

supersedes company KHD engine F 16 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 65	900	16,0	without auxoliary spring	ca. 23	300	8,0	880	0
	930	10,5					500	0
	950	6,0			70	19-21	330	1,2-1,8
(2a)	930	9,5-12,0	with auxiliary spring		300	7,7-8,3		
	960	4,2-6,7			350	3,5-5,5		
	1050	0-1,0			440	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Pump runs in tandem with PE 8 P 100/900/5 RS 114 - 0 401 818 011 Take full-load delivery from VDT-I-401/103								

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOB 7.0 a
1. Edition
En

PE 6 P 100 A 320 RS 256 RQV 250-1200 PA 212/2 R

supersedes

company Volvo-BM
engine D 70 B

Note sleeve position 36.0 mm - see WPP 001/4, suppl. 6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,3 - 13,1	0,5			2,5 ± 0,1
600	9	5,2 - 6,2				(max. 2,2-2,9)
	12	11,1 - 12,4				–
	15	16,6 - 18,2				
200	9	3,2 - 4,2				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
ca. 68	1290	15,0-18,3	-	-	-	ca.23	120	8,3-10	1290	8,2
	1560	0					250	6,2-8,2		
ca. 66	1200	15,1-18,2					350	3,3-5,4	-	-
	1300	8,0-13,1					500	0-2,5		
	1400	0- 7,3					570	0		
	1520	0				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
700	73,0 - 75,0	1230 - 1240			100	230,0-270,0		
		1 mm RW weniger			225	10,0- 16,0		
(Sp.	2 + 5 (increase by ± 10 cm³)							

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 VOL 7.0d
4. Edition
En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 272 RQV 250-1200 PA 235/2R
RS 272Z 250-1200
RS 272Z 250-1250

supersedes 10.77
company Volvo
engine TD 70 E

Port-closing test with/without ROBO diaphragm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	15,3 - 16,1	0,6			2,5±0,1 ** (max.2,2-2,9)
600	9	9,1 - 10,4				
	12	14,9 - 16,5				
	15	19,3 - 21,2				
200	9	6,7 - 7,7				

Adjust the fuel delivery from each outlet according to the values in [ ]

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	Sliding sleeve travel Torque control travel: rev/min 10	mm 11
ca.50	1290	15,0-18,4				ca.13	100	8,8-11,0	350	1,4-2,0
	1560	0					200	7,1-9,9	800	4,4-4,8
ca.45	1200	5,0-18,2					300	3,8-6,8	1290	8,2
	1300	8,2-13,3					400	0 -3,6		
	1400	0 - 7,4					510	0	-	-
	1510	0								

Torque control travel a - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40 C (104 F) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation rev/min 3	Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point rev/min 6	cm³/1000 strokes 7	Intermediate rotational speed Torque-control travel rev/min 8	mm
272	-LDA 0,7 bar		LDA	0 bar				
700	91,0 - 93,0	1230-1240 *	700	70,5 - 73,5	100	165 - 205		
272Z	-LDA 0,7 bar		LDA	0 bar	250	22 - 26	**	
700	108,0 - 110,0		700	70,5 - 73,5	Streuung max.3,0			
	(increase by ± 1,0 cm³)							

Checking values in brackets

* 1 mm less control rod travel than col 2

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B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1320 1400 1490 1580	15,0-18,2 8,3-13,5 0- 7,3 0	-	-	-	ca.13 (3a)	100 200 375 510	8,8-11 7,0-9,7 0- 4 0	1320 -	8,3 -

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
See page 1		1290-1310*						

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing ~~increasing~~ pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm
272 with 235/2R	0,33-0,35	0,19-0,25	
272Z with 235/2R	0,38-0,41	0,16-0,22	

En

Testoil-ISO 4113

A24

A24

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 AEC 12,0 a

1. Edition

En

PE 6 P 120 A 320 RS 298 RQV 250-1000 PA 277 R

Komb.-Nr. 0 401 846 395

supersedes

company AEC

engine TL 12/10

Test-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0+0,1	20,0-20,4	0,5(0,9)			
250	7,0-7,2	1,6-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca. 34	100	min. 8,5	200	0,8-1,1
ca. 59	11,0	1040-1050					250	7,0 - 7,2	470	3,8-4,1
	4,0	1085-1115					430-490	= 2,0	730	5,1-5,3
	1250	0-1,0							1000	7,3
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 200,0-204,0 (197,0-207,0)	1040-1050*	LDA 1000	0 bar 187,0-191,0 (184,0-194,0)	- 250	- 16,0-20,0 (13,0-23,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

B1

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

B1

D. Adjustment Test for Manifold Pressure Compensator

AEC 12,0 a

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 298 + RQV..PA 277 R	0,70	0 0,31 0,29	12,0-12,1 11,3-11,4 11,8-11,9 11,4-11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 AEC 12,0 a 2

1. Edition

En

PE 6 P 120 A 320 RS 298 RQV 250-1100 PA 277 R

supersedes

company AEC

engine TL 12/10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	19,7-20,3	0,5			
600	9,0	8,4-9,6				
600	15,0	18,6-20,4				
200	9,0	3,3-4,3				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	Upper rated speed: rev/min Control rod travel mm 2	Upper rated speed: Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	Intermediate rated speed: rev/min 5	Intermediate rated speed: Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	Lower rated speed: rev/min 8	Lower rated speed: Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	Sliding sleeve travel (1): mm 11
ca. 61	1100	15,0-18,3	-	-	-	ca. 25	80	7,0-11,0	200	0,9-1,2
	1150	8,2-13,6					150	5,1-8,6	500	3,7-3,9
	1200	0-7,2					250	1,1-4,8	800	5,2-5,6
	1260	0					350	0	1100	7,9
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	Full-load delivery: cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	Fuel delivery characteristics: cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	Starting fuel delivery: cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Torque-control travel: Control rod travel mm 9
LDA 1100	0,7 bar 235,0-239,0 (233,0-241,0)	1140-1150*	LDA 1100	0 bar 210,0-215,0 (208,0-217,0)	- 250	- 13,0-23,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 298 + RQV..PA 277 R	0,45-0,48	0,36-0,41	- 0,1 - 1,1

Notes

(1) when n rev/min and gauge pressure bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 AEC 12,0 a 1

1. Edition

En

PE 6 P 120 A 320 RS 298 Z RQV 250-1100 PA 277 R
Komb.-Nr. 0 401 846 389
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company: AEC

engine: TL 12/10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-No. 419

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	14,0+0,1	20,0-20,2	0,5(0,9)			
250	7,7-7,9	1,6-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 34	100	min. 9,2	200	0,9-1,2
ca. 61	12,5	1140-1150					250	7,7-7,9	500	3,7-3,9
	4,0	1210-1240					420-480	= 2,0	800	5,2-5,6
	1350	0-1,0							1100	7,9
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1140-1150*	LDA	0 bar	-	-	-	-
1100	200,0-202,0		1100	176,0-180,0	250	16,0-20,0		
	(197,0-205,0)			(174,0-182,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

B5

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 298 Z + RQV..PA 277 R	0,70	0 0,50 0,45	14,0-14,1 12,4-12,5 13,5-13,6 12,9-13,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 a 1
2. Edition

En

PES 6 P 110 A 720 RS 361 US-RSV 400-1100 P 2/497
Komb.-Nr. 9 400 231 108
Use overflow valve 1 457 413 010

supersedes 10.83
company John Deere
engine 6466 A
161 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testbench 113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,75-2,85 (2,70-2,90) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	15,0-15,3	0,4(0,75)			
400	5,5-5,7	0,8-1,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.24	400	5,2	1100	11,0-11,1
							100	min.19,0	950	11,0-11,2
							400	5,6-5,8		
ca.48	10,0	1140-1150					610-670	= 2,0		
(2a)	4,0	1240-1270					700	max. 1,0		
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ( ) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1100	0,9 bar 149,5-152,5 (147,0-155,0)	1140-1150*	LDA 950	0,9 bar 151,0-155,0 (148,0-158,0)	100	160,0-180,0 (156,0-184,0)	400	5,6
			LDA 500	0 bar 119,5-123,5 (116,5-126,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
7.84

B7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P..RS361 + US-RSV..P2/497	0,38	0,24 0	11,25-11,35 10,40-10,80 10,20-10,40

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 q 27

1. Edition

En

PES6P 110 A 720 LS 375 RQ 300/1100 PA 658-10

Komb.-Nr. 0 402 046 309

supersedes –
company: MAN
engine: D2566 MLUM/US
191 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,0-3,1 mm (from BDCRW = 9,0-12,0 mm, Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,6+0,1	14,7-15,0	0,4 (0,75)			
300	7,4-7,6	1,5-2,0	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,8	1145-1160	300	7,5	100	min 9,0	750	12,6-12,7
VH=	max. 46°			4,0	1185-1215			300	7,4-7,6	1100	11,8-11,9
				1350	0-1,0			390-430	=2,0	880	12,3-12,5
										975	11,9-12,2

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	0,7 bar	–	LDA	0,2 bar	100	225,0-245,0
750	147,0-150,0 (144,5-152,5)		600	145,0-149,0 (142,0-152,0)		(221,0-249,0)
LDA	0,7 bar		LDA	0 bar	300	7,4-7,6 mm RW
1100	136,0-140,0 (133,0-143,0)		500	144,0-148,0 (141,5-150,5)		

Checking values in brackets

7.84

B9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES6P..LS 375 +RQ..PA 658-10	0,70	0 0,20 0,15	12,6-12,7 11,7-11,8 12,4-12,5 11,9-12,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

B10

En 840

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BET 8,8 b 1

2. Edition

En

PE 6 P 120 A 320 RS 377 RQV 275-1200 PA 425-2
Komb.-Nr. 0 401 846 489
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

superseded 10.83
company RVI
engine: MIDS 062030
158 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,6+0,1	15,0-15,2	0,5(0,9)			
275	5,4-5,6	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1310	15,2-17,8	-	-	-	ca. 10	200 275	min. 8,5 5,4 - 5,6	275 425 900 1200	1,0-1,2 3,0-3,5 5,6-5,9 7,6
ca. 64	11,6 4,0 1500	1245-1255 1375-1405 0-1,0				275-375 ③a				

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 150,0-152,0 (147,0-155,0)	1245-1255*	LDA 350	0 bar 51,0-55,0 (48,0-58,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

B11

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B11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure – bar	Measurement Gauge pressure = bar	Control rod travel – diminution difference mm (1)
PE 6 P..RS 377 + RQV..PA 425-2	0,70		12,6-12,7
		0	11,1-11,2
		0,20	12,2-12,3
		0,16	11,5-11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

B12

B12

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 HIP 11,9 a
2. Edition
En

PE 6 P 110 A 720 RS 380 RQV 250-950 PA 434-1
Komb.-Nr. 0 401 846 495

supersedes 10.83
company: Hispavinsa
engine: BSR 36 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	15,5+0,1	19,0-19,2	0,4 (0,75)			
250	8,5-8,7	2,4-3,0	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1050	15,2-17,8	-	-	-	ca. 16	100	min. 10,0	200	0,5-0,8
							250	8,5-8,7	450	3,8-4,2
ca. 65	14,5	990-1000					415-475	2,0	700	5,2-5,4
	4,0	1115-1145				350-465			950	7,5
	1250	0-1,0								
						③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 950	0,7 bar 190,0-192,0 (187,0-195,0)	990-1000*	LDA 500	0 bar 141,0-144,0 (138,5-146,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel then col. 2

7.84

B13

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B43

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P.. RS 380 +RQV..PA 434-1	0,70	0 0,45 0,34	15,5-15,6 13,2-13,3 15,0-15,1 13,7-13,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BET 8,8 a 2

1. Edition

En

PE 6 P 120 A 320 RS 383 RQV 275-1100 PA 425-1
Komb.-Nr. 0 401 846 481
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes-,
company: RVI
engine MIDS 062030

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	14,2+0,1	15,1-15,3	0,5(0,9)			
275	5,4-5,6	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1170	15,2-17,8	-	-	-	ca. 11	200	min.8,5	275	1,2-1,3
ca.65	13,2	1155-1165					275	5,4-5,6	450	3,3-4,0
	4,0	1315-1345							800	6,1-6,3
	1450	0 - 1,0				275-365 (3a)			1100	8,0

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 151,0-153,0 (148,0-156,0)	1155-1165*	LDA 500	0 bar 87,0-89,0 (84,0-92,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

B15

BAS

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..RS 383 +RQV..PA 425-1	0,70		14,2-14,3
		0	12,4-12,5
		0,23	13,7-13,8
		0,18	12,8-13,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 DAF 11,6 t 5
2. Edition
En

PE 6 P 120 A 320 RS 385-2 RSV 250-750 P 7/479
Komb.-Nr. 0 401 876 274
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 10.83
company DAF
engine DKX 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
750	12,6+0,1	22,1-22,3	0,5(0,9)			
250	5,4-5,6	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Degree of deflection of control lever 1	Upper rated speed rev/min: Control rod travel mm 2	Upper rated speed rev/min: Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Lower rated speed: Control rod travel mm 9	(3) Torque control: rev/min 10	Torque control: Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	250	5,0	-	-
	X = 3,75						250	4,9-5,1		
ca.44 (2a)	11,6	790-795					250-290	= 2,0 **		
	4,0	810-825								
	950	0,3-1,7								

The numbers denote the sequence of the tests

** Set idle auxiliary spring at 2,0 mm.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	221,0-223,0 (218,0-226,0)	790-795 *	-	-	-	-	250	5,0

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

PES 6 P120 A 720 LS 388 RQ250/1100 PA 509 (1)
RQV250-1100 PA 504 (2)
Komb.-Nr. 0 402 046 208 (1) MAN-Nr. 2-7083
0 402 046 209 (1) MAN-Nr. 2-7066
0 402 046 204 (2) MAN-Nr. 2-7113
0 402 046 205 (2) MAN-Nr. 2-7111

supersedes 3.84
company: MAN
engine: D 2566 MK/MKP
206 kW/2200 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4-11,5	17,7- 18,1	0,5(0,9)			
250	6,2- 6,4	1,2- 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

RQ - 509

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,2	1145-1160	250	6,3	100	min.7,8	1100	10,2-10,3
1100	Breakway			4,0	1180-1210			250	6,2-6,4	975	10,4-10,6
1400	0 - 1,0	VH ca. 49°								875	11,0-11,1
								350-	390 =2,0		
										750	11,4-11,5

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 750	0,7 bar 177,0-181,0 (174,0-184,0)		LDA 650	0,7 bar 171,0 - 177,0	100	215,0-235,0
			LDA 600	0,31 bar 134,0 - 140,0	250	12,0- 28,0
LDA 1100	0,7 bar 166,0 - 172,0 (162,5 - 175,5)				100-1	70 (80-190)
			LDA 600	0 bar 102,0 - 106,0		

Checking values in brackets

(Col.4-5 inrease by ± 3 cm³)

7.84

B. Governor Settings

RQV - 504

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	rev/min	(1) mm
1	2	3		4	5	6		7	8	9		10	11
max.	1100	15,2-17,8						ca. 15	100	min.7,8		250	1,2
									250	6,2-6,4		500	4,0-4,3
ca.66	9,2	1140-1150							395-455= 2,0			1150	8,4
	4,0	1220-1250											
	1400	0 - 1,0						(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar		LDA	0,7 bar			1100	10,2-10,3
750	177,0 - 181,0	1140-1150*	650	171,0 - 177,0	100	215,0-235,0	975	10,4-10,6
	(174,0 - 184,0)		LDA	0,31 bar	250	12,0- 18,0	875	11,0-11,1
LDA	0,7 bar		500	134,0 - 140,0			750	11,4-11,5
1100	166,0 - 172,0		LDA	0 bar	100-170	(80-190)		
	(162,5 - 175,5)		500	102,0 - 106,0				

Checking values in brackets (Sp.4-5 increase by ± 3,0 cm^3)

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm
388 + 509	0,7		11,4 - 11,5
		0,43	10,9 - 11,1
		0,31	10,3 - 10,4
		0	9,2 - 9,3
388 + 504	0,7		11,4 - 11,5
		0,43	10,9 - 11,1
		0,31	10,3 - 10,4
		0	9,2 - 9,3

En

B19

BAG

Testoil-ISO 4113

PES 6 P 120 A 320LS 403 RQ 250/1100 PA 487 R
Komb.-Nr. 0 402 046 198

superseded 4.80
company MAN
engine D 2566

6 - 2 - 4 - 1 - 5 - 3
0 - 60-120-180-240-300° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,0-14,1	22,0 - 22,4	0,5(0,9)			
250	7,5-7,7	1,7 - 2,3	0,8(1,2)			
1100/650/500/500		C,4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,5	1145-1160	250	7,6	100	min.9,1	1100	12,5-12,6
				4,0	1190-1220					955-1035	=12,9
1100	Breaka-way	VHca. 49°						250	7,5-7,7		
								355-395	=2,0	875-955	=13,7
1300	0 - 1									750	14,0-14,1

Torque-control travel on flyweight assembly dimension a = 0,55 mm

Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel mm cm³/1000 strokes 7
				Checking values page 2		
LDA 750	1,0 bar 220,0 - 224,0 (217,0 - 227,0)		LDA 650	1,0 bar 212,0 - 218,0	100	215,0-235,0
LDA 1100	1,0 bar 185,0 - 191,0 (182,0 - 194,0)		LDA 500	=,29 bar 138,0 - 144,0	100-170	(80-190)
			LDA 500	0bar 115,0 - 119,0		

Checking values in brackets

9.84

B20

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
403 + 487 R	1,0		14,0-14,1
		0,58	13,4-13,7
		0,29	11,7-11,8
		0	10,8-10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Checking values for FM

LDA 1,0 bar
650 1/min (209,0 - 221,0)
LDA 0,29 bar
500 1/min (135,0 - 147,0)
LDA 0bar
500 1/min (112,0 - 122,0)

PE 6 P 110 A 320 RS 407-1 RQ 275/1000 PA 641
Komb.-Nr. 0 401 846 472

supersedes –
company DAF
engine DKFL 1160
185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75 - 2,95) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,8±0,1	15,0 - 15,3	0,4 (0,75)			
275	7,0-7,2	0,9 - 1,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	11,1	1045-1060	275	7,1	100	min. 8,6	600	13,0 -13,1
				4,0	1110-1140			275	7,0 - 7,2	1000	12,1-12,3
				1300	0 - 1,0			350-390	= 2,0	790	12,6-12,8
										865	12,2-12,5

Torque-control travel on flyweight assembly dimension a = 0,35 mm

Speed regulation: At 1045-1060 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,7 bar	-	LDA	0,7 bar	100	245,0 - 285,0
600	150,0 - 153,0		1000	135,5-140,5		(141,0 - 289,0)
	(147,5 - 155,5)			(132,5 - 143,5)		= 19,5-21,0 mm RW
			LDA	0 bar		
			600	136,0 - 139,0	275	7,0 - 7,2 mmRW
				(133,5 - 141,5)		

Checking values in brackets

7.84

B22

B22

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P.. RS 407-1 + RQ.. PA 641	0,50	0 0,30	12,8 - 12,9 12,1 - 12,2 12,6 - 12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 RVI 9,8 a 2
2. Edition

En

PES 6 P 120 A 320 RS 419-1 RQ 750 PA 595-1
Komb.-Nr. 0 402 046 232
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes-
company RVI
engine MIDS 0 62045

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tasicil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,3+0,1	24,6-24,8	0,5(0,9)			
250	5,8-6,0	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,3 4,0 900	750-755 787-800 0 - 1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: Δ 750-755 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	246,0-248,0 (243,0-251,0)	-	-	-	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

7.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

B24

B24

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 o 1
4. Edition
En

PE 6 P 120 A 320 RS 415 RSV 250-900 P 5/475
Komb.-Nr. 0 401 876 248
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 12.82
company DAF
engine DKS-E 1160

Note VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl HD

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,9-12,0	18,4-18,7	0,5(0,9)			
250	6,7-6,9	1,9-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,3	650	12,1-12,2
	x =	5,0							900	11,4-11,6
ca.46 (2a)	10,4	940-950					250	6,7-6,9		
	4,0	1025-1055					395-455	= 2,0		
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ( ) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	940-950 *	LDA	0,7 bar	100	310,0-350,0 - (306,0-354,0)	-	-
650	184,0-187,0 (181,0-190,0)		900	181,0-186,0 (178,0-189,0)				
			LDA 600	0 bar 129,0-132,0 (126,0-135,0)	250	19,0-23,0 (16,0-26,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

C1

CA

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 415 + RSV..P 5/475	0,70	0 0,27 0,12	11,9-12,0 9,8-9,9 11,4-11,5 10,0-10,6

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C2

En

Test Specifications Fuel Injection Pumps and Governors

(1A) WPP 001/4 DAF 11,6 o 3

2. Ausgabe

En

PE 6 P 120 A 320 RS 415-1 RSV 250-900 P 5/475
Komb.-Nr. 0 401 876 259
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 12.82
company DAF
engine DKS-E 1160
206 kW (280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Note VDT-I-420/114

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,9+0,1	18,4-18,7	0,5(0,9)			
250	6,7-6,9	1,9-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,3	650	12,1-12,2
	x = 5,0						250	6,7-6,9	900	11,4-11,6
ca.46 (2a)	10,4	940-950					395-455	= 2,0		
	4,0	1025-1055								
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) idls: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 650	0,7 bar 184,0-187,0 (181,0-190,0)	940-950*	LDA 900	0,7 bar 181,0-186,0 (178,0-189,0)	100	310,0-350,0 (306,0-354,0)	0 -	-
			LDA 600	0 bar 129,0-132,0 (126,0-135,0)	250	19,0-23,0 (16,0-26,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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C3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P.. RS 415-1 + RSV .. P 5/475	0,70	0 0,27 0,12	11,9-12,0 9,8-9,9 11,4-11,5 10,0-10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C4

En C4

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 11,6 o 6
1. Edition
En

PE 6 P 120 A 320 RS 415-1 RSV 250-1100P5/458-2
Values only apply to test nozzle-and-holder assembly 1 688 901 0[illegible] and fuel-injection test tubing 1 680 750 067

supersedes -
company DAF
engine DKV 1160
Komb.-Nr. 0 401 876 273

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note VDT-I-420/114

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75 - 2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,6+0,1	17,6-17,8	0,5 (0,9)			
250	6,5-6,7	1,4 - 2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,1-1,0	-	-	-	ca. 24	250	5,8	650	11,8 -11,9
	x = 5,0						250	6,2 - 6,4	1100	10,6 -10,8
ca. 53 (2a)	9,6	1135-1145					645-705	= 2,0	800	11,5 -11,7
	4,0	1225-1255							875	10,9 -11,2
	1390	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 650	0,7 bar 175,5-177,5 (172,5-180,5)	1135-1145*	LDA 1090	0,7 bar 164,0 - 170,0 (161,0 - 173,0)	100	315,0-335,0 (311,0-339,0)	250	6,3
			LDA 600	0 bar 147,0-149,0 (144,0-152,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P.,RS 415-1	0,70		11,6 - 11,7
+ RSV..P 5/458-2		0	10,5 - 10,6
		0,44	11,3 - 11,4
		0,35	10,6 - 11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 1

3. Edition

En

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

superseding 83

company RVI

engine MIDR 062045
206 kW (280 PS)

Komb.-Nr.
0 402 046 249

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-No. 419

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Port closing mark 10,5° after port closing cylinder 1

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,7-9,8	17,6-17,8	0,5(0,9)			
275	5,0-5,2	1,9-2,5	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 8	200	min.5,1	250	1,0-1,2
							275	3,3-3,5	530	4,0-4,6
ca. 64	8,7	1155-1165							820	5,9-6,1
	4,0	1220-1250				280-395			1100	8,1
	1350	0-1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 175,5-177,5 (172,5-180,5)	1155-1165*	LDA 700	0,7 bar 163,0-171,0 (160,0-174,0)	100	150,0-170,0 (146,0-174,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.84

C7

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

C7

D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PES 6 P..RS 419 + RQV..PA 495	0,70		9,7-9,8
		0	7,7-7,9
		0,25	9,1-9,2
		0,20	8,2-8,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 a 3
1. Edition

En

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495-5
Komb.-Nr. 0 402 046 300
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company RVI
engine MIDR 062045
191 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing mark 10,5° after port closing cylinder 1

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,7-9,8	16,4 - 16,6	0,5 (0,9)			
275	4,9-5,1	1,7 - 2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1150	15,2 - 17,8	-	-	-	ca.9	100	min.5,3	250	1,0-1,2
ca. 64	8,7	1155-1165					275	3,6-3,8	450	3,4-3,8
	4,0	1215-1245							850	6,1-6,3
	1350	^ - 1,0				285-400 ③a			1100	8,1

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 164,0-166,0 (161,0-169,0)	1155-1165 *	LDA 700	0,7 bar 152,0-158,0 (149,0-161,0)	100	140,0-160,0 (136,0-164,0)	-	-
			LDA 500	0 bar 100,0-102,0 (97,0-105,0)	275	3,6-3,8mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

C9

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Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6P RS 419 + RQV..PA 495-5	0,70	0 0,23 0,20	9,7-9,8 8,5-8,6 9,3-9,4 8,7-8,9

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 a 4
En 1. Edition

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495-6
Komb-Nr. 0 402 046 302
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes_
company: RVI
engine: MIDR 062030
191 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testing

A. Fuel Injection Pump Settings

Port closing mark 10,5° after port closing cylinder 1

Port closing at prestroke 2,8 - 2,9 (2,75 - 2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,6+0,1	17,4 - 17,6	0,5 (0,9)			
275	4,1-4,3	0,9 - 1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2 - 17,8	-	-	-	ca.9	200	min.5,9	250	1,0-1,2
ca.64	9,6	1155 - 1165					275	4,1 - 4,3	475	3,5-4,0
	4,0	1230 - 1260							900	6,4-6,6
	1350	0 - 1,0				290-400 (3a)			1100	8,1

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 174,0-176,0 (171,0-179,0)	1155 - 1165*	LDA 700	0,7 bar 160,0-166,0 (157,0-169,0)	100	140,0-160,0 (136,0-164,0)	-	-
			LDA 500	0 bar 94,0-96,0 (91,0-99,0)	275	4,1-4,3mmRW		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

C11

CAA

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D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure bar	Measurement Gauge pressure bar	Control rod travel - diminution difference mm (1)
PES 6 P RS 419	0,70		10,6 - 10,7
+ RQV..PA 495-6		0	8,4 - 8,5
		0,27	10,0 - 10,1
		0,22	8,9 - 9,1

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 a 5

1. Edition

En

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495-7
Komb.-Nr. 0 402 046 303
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company RVI
engine MIDR 062045
157 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-ISO 417

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	7,8-7,9	13,2-13,4	0,5(0,9)			
275	4,6-4,8	1,7-2,3	0,8(1,2)	Port closing mark at 11,5° cam shaft after port closing for 1st. cylinder at control-rod travel 9.0-12.0 mm.		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 8	200	min. 5,0	275	1,5-1,6
ca. 64	6,8	1155-1165					275	3,4 - 3,6	450	3,4-3,8
	4,0	1195-1225							850	6,1-6,3
	1350	0-1,0				280-395 (3a)			1100	8,1

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 132,0-134,0 (129,0-137,0)	1155-1165*	LDA 700	0,7 bar 120,0-126,0 (117,0-129,0)	100	150,0-170,0 (146,0-174,0)	-	-
			LDA 500	0 bar 88,0-90,0 (85,0-93,0)	275	3,4-3,6 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

C13

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.

C13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..RS 419 + RQV..PA 495-7	0,70	0 0,16	7,8-7,9 7,3-7,4 7,5-7,6

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 2

1. Edition

En

PES 6 P 120 A 320 RS 419-2 RQV 275-1050 PA 495-4
Komb.-Nr. 0 402 046 294
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company RVI
engine MIDS 062045
169 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Port closing mark at 9,5° cam shaft after port closing for 1st. cylinder at control-rod travel 9.0-12.0 mm.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	8,8-8,9	15,5-15,7	0,5(0,9)			
275	3,3-3,5	0,7-1,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 8	200	min.5,2	250	1,0-1,2
ca. 63	7,8	1105-1115					275	3,3-3,5	800	4,8-5,0
	4,0	1135-1165							1050	7,5
	1300	0-1,0				275-390				
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1050	0,7 bar 155,0-157,0 (152,0-160,0)	1105-1115*	LDA 700	0,7 bar 145,0-151,0 (142,0-154,0)	100	140,0-160,0 (136,0-164,0)	-	-
			LDA 500	0 bar 106,0-108,0 (103,0-111,0)	275	7,0-13,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

C15

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C15

D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..RS 419-2 + RQV..PA 495-4	0,70	0 0,24 0,23	8,8-8,9 8,0-8,2 8,5-8,6 8,2-8,4

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C16

46
En

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 RVI 8,3 d 3

1. Edition

En

PES 6 P 120 A 320 RS 419-2 RQV 275-950 PA 698
Komb.-Nr. 0 402 046 293
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company RVI
engine MIDS 062045
129 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testol ISO 4113

A. Fuel Injection Pump Settings

Port closing mark at 9,5° cam shaft after port closing for 1st. cylinder at control-rod travel 9.0-12.0 mm.

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
500	8,0-8,1	10,6-10,8	0,5(0,9)			
275	4,4-4,6	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	ca. 8	200	min. 5,1	275	1,5-1,6
ca. 62	7,0	1010-1020					275	3,3 - 3,5	500	3,8-4,3
	4,0	1045-1075							800	6,4-6,7
	1200	0-1,0				280-395			950	7,6
						(3a)				

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed: rev/min (4a) 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
500	106,0-108,0 (103,0-111,0)	1010-1020*	950	124,0-130,0 (121,0-133,0)	100	150,0-170,0 (146,0-164,0)	500	8,0-8,1
							950	7,3-7,4
							750	7,6-7,8
					275	3,3-3,5 mm RW	800	7,4-7,7

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

C17

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11.4 s
En 1. Edition

PES 6 P 110 A 820 LS 422 RQV 300-1100 PA 594-5
Komb.-Nr. 0 402 046 305

supersedes –
company Daimler-Benz
engine OM 407
147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2+0,1	11,0 - 11,2	0,4 (0,8)			
300	8,0 -8,2	1,4 - 2,0	0,4 (0,7)			
600	-	C. Sp. 4 u. 5.	0,6 (0,9)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1: rev/min 10	mm 11
max. 1100		5,2 - 17,8	-	-	-	ca. 32	100	min. 8,8	250	1,0 -1,2
ca.59	9,2	1140-1150					300	7,3-7,5	530	3,5-3,7
	4,0	1175-1205							820	5,0-5,4
	1350	0 - 1,5							100	7,7
						300-500 3a				

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed 2b 4a: rev/min 3	Fuel delivery characteristics high idle speed 5a 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point 6: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9
1100	110,0-112,0 (107,0-115,0)	1140-1150 *	600	93,0 - 97,0 (90,0-100,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 RVI 12,0 c
3. Edition
En

Testoil-ISO 4113

PES 6 P 120 A 320 RS 426 RQV 250-1100 PA 570

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 5.83
company: RVI
engine MIDS 063540
195 kW (265 PS)
Komb.- Nr. 0 402 046 219

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Mark for start of pump delivery on tester body 12° after start of pump delivery, cyl.1

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	10,3+0,1	18,0 - 18,3	0,5(0,9)			
250	4,9-5,1	1,3 - 1,9	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1270	15,2-17,8	-	-	-	ca. 9	100	min. 5,5	200	0,7-1,0
ca.61	8,3	1145-1155					250	3,9-4,1	500	3,4-3,6
	4,0	1220-1250							800	4,8-4,9
	1400	0 - 1.0				275-400			1100	6,9
						(3a)				

Torque control travel a = 1,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 650	0,7 bar 180,0-183,0 (177,0-186,0)	1140-1150 *	LDA 1100	0,7 bar 170,0-173,0 (167,0-176,0)	100	135,0-155,0 (131,0-159,0)	1100	0,1+0,2
							650	0,3+0,1
							1030	0,4+0,1
			LDA 500	0 bar 122,0-126,0 (119,0-129,0)			890	0,9+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure bar	Gauge pressure - bar	mm (1)
PFS 6 P.. RS 426 + .. PA 570	0,9		10,3 - 10,4
		0	8,6 - 8,7
		0,29	9,8 - 9,9
		0,24	9,0 - 9,2

Notes

(1) when n rev/min and gauge pressure bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4n
En 3. Edition

Testoil-ISO 4113

PES 6 P 100 A 820 LS 432 RSV 350-750 P1/ 487
Komb.-Nr. 0 402 076 051

supersedes 3.82
company Daimler-Benz
engine OM 407
114 kW (155 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,2+0,1	12,9 - 13,1	0,3(0,6)			
350	8,4-8,6	1,2 - 1,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	-	-	-	-	-
	x =	0,25								
(5) sa. 34	13,2	750-755								
	4,0	788-801								
	850	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
700	129,0-131,0 (127,0-133,0)	750-755 *	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

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C21

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 9,5 a 2

3. Edition

En

Testoil-ISO 4113

PES 5 P 110 A 820 LS 434 RSV 350-750 P 1/487

1 - 3 - 5 - 4 - 2 je 72° ±0,5° (±0,75°)

supersedes 7.83

company Daimler-Benz

engine OM 409

Komb.-Nr. 0 402 075 001

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 5; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	13,1+0,1	13,5 - 13,7	0,4(0,8)			
350	7,7 -7,9	1,1 - 1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	-	-	-	-	-
	x =	2,5								
ca. 34 (5)	12,1	750-755								
	4,0	790-803								
	850	0,3-1,7								

* Set idle auxiliary spring at 2,0 mm.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
730	135,0-137,0 (132,0-140,0	750-755*	-	-	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

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C22

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 9,5 a 4
3. Edition

En

PES5P110A820 LS 434 RQ300/1100 PA 327-4
Komb.-Nr. 0 402 045 023

supersedes 7.83
company Daimler-Benz
engine OM 409
135 kW (184 PS)

1 - 3 - 5 - 4 - 2 je 72° ±0,50° (±0,75°)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,4+0,1	11,0-11,2	0,4(0,8)			
300	7,6-7,8	1,2 - 1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,8-14,6	600	14,2	9,4 4,0 1300	1145-1160 1175-1205 0 - 1,5	300	7,1	100 300 380-420	min.9,1 7,6-7,8 =2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
1100	110,0-112,0 (107,5-114,5)	-	600	90,0-94,0 (87,0- 97,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

8.84

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 CAT 7,0 a
1. Edition
En

PES 4 P 80 A 720 LS 440 RQV 375-1100 PA 610
Komb.-Nr. 9 400 087 277

supersedes
company Caterpillar
engine 3304 NA
100 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0+0,1	11,2-11,3	0,2(0,35)			
375	6,7-6,9	1,0-1,7	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1030	15,2-17,8	-	-	-	ca. 14	250	min. 10,0	1100	8,3
ca.67	12,1 4,0 1350	1130-1140 1230-1260 0 - 1,0				350-450 (3a)	375 480-540	5,9-6,1 = 2,0		

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	112,0-113,0 (110,5-114,5)	1130-1140 *	700	107,5-110,5 (106,5-111,5)	100	152,0-172,0 = 17,6-18,6 mm RW	-	-
					375	5,9-6,1 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 11,6 u 2
2. Edition
En

PE 6 P 110 A 720 RS 441-1 RSV 250-750 P 7/479-1
Komb.-Nr. 0 401 876 270

supersedes 7.83
company DAF
engine DHS 825 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Test oil ISO 4113

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,6+0,1	14,3-14,6	0,4(0,75)			
250	4,8-5,0	0,9-1,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	250	4,9	-	-
	x =	4,0					250	4,8-5,0		
ca. 45 (2a)	10,6	790-795					250-290	= 2,0 **		
	4,0	810-825								
	950	0,3-1,7								

The numbers denote the sequence of the tests

** Set idle auxiliary spring at 2,0 mm.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	143,0-146,0 (140,5-148,5)	790-795*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D1

DA

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4 1 4
4. Edition
En

Testoil-ISO 4113

PES 6 P 110 A 820 LS 442 RSV 350-750 P 1/487
Komb.-Nr. 0 402 076 052

supersedes 7.83
company Daimler-Benz
engine OM 407
121 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	12,1 +0,1	11,9 - 12,1	0,4(0,8)			
350	8,1-8,3	1,3 - 2,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	-	-	-	-	-
	x=2,5									
(5) ca.35	11,1	750-755								
	4,0	788-801								
	850	0,3-1,7								

* Set idle auxiliary spring at 2,0 mm.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
730	119,0 - 121,0 (116,0 - 124,0)	750-755*	-	-	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

D2

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

32

PES 6 P 110 A 820 LS 442 RQ 250/1100 PA 327-8
Komb.-Nr. 0 402 046 298

supersedes -
company: Daimler-Benz
engine: OM 407
162 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tesch-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15 - 3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,6-11,8	0,4 (0,8)			
250	8,0-8,2	1,2 - 1,8	0,4 (0,7)			
600	-	C, Sp.4 u. 5	0,6 (0,9)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	13,0 - 14,0	550	13,5	10,0 4,0 1300	1145-1160 1180-1210 0 - 1,0	250	7,6	100 250 330-370	min. 9,0 7,5-7,7 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145 - 1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
1100	116,0 - 118,0 (113,5 - 120,5)	-	600	93,0 - 97,0 (90,0 - 100,0)	100	130,0 - 150,0 (126,0 - 154,0)

Checking values in brackets

7.84

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 11,41 10

1. Edition

En

PE 6 P 110 A 820 LS 442 RQ 250/950 PA 483-2

Komb.-Nr. 0 402 046 299

supersedes –

company: Daimler-Benz

engine: OM 407
147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tesci-ISC 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	11,5+0,1	11,3-11,5	0,4(0,8)			
250	8,4-8,6	1,4-2,0	0,4(0,7)			
600	-	C, Sp. 4 u. 5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slide: PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	10,5	995-1010	250	8,1	100	min.9,7	-	-
				4,0	1015-1045			250	8,0-8,2		
				1150	0-1,0			330-370	=2,0		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 995-1010 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel mm / cm³/1000 strokes 7
950	113,0-115,0 (110,0-118,0)	-	600	102,0-106,0 (99,0-109,0)	100	140,0-160,0 (136,0-164,0)

Checking values in brackets

7.84

D4

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D4

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 11,4 L3

4. Edition

En

Testoil-ISO 4113

PES 6 P 110 A 820 LS 442 ROV 300-1100 PA 594-3

Komb.-Nr. 0 402 046 233
0 402 046 301

supersedes: 7.84

company: Daimler-Benz

engine: OM 407
162 kW (220 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,6 - 11,8	0,4(0,8)			
300	8,0-8,2	1,4 - 2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca.32	100	min. 9,0	250	1,0-1,3
							300	7,3-7,5	530	3,9-4,2
ca. 60	10,0	1140-1150								
	4,0	1175-1205				320-450			820	5,5-5,8
	1300	0 - 1,0							1100	8,1
						(3a)				

Torque control travel c = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	116,0-118,0 (113,0-121,0)	1140-1150*	600	93,0- 97,0 90,0-100,0)	100	130,0-150,0 126,0-154,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D5

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4 1 11

1. Edition

En

PES 6 P 110 A 820 LS 442 RQV 300-1100 PA 594-4

Komb.-Nr. 0 402 046 229

supersedes

company Daimler-Benz

engine OM 407
176 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,9-13,1	0,4(0,75			
300	7,8-8,0	1,4-2,0	0,45(0,75)			
600	-	C, Sp.4 u. 5	(0,9)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca.30	100	min.9,0	250	1,0-1,2
ca.61	10,7	1140-1150					300	7,3-7,5	530	3,5-3,7
	4,0	1180-1210							820	5,0-5,4
	1300	0 - 1,0				320-450 (3a)			1100	7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	129,0-131,0 (126,5-133,5)	1140-1150*	600	119,0-123,0 (116,0-126,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 MB 11,4 1 6

3. Edition

En

PES 6 P 110 A 820 LS 442-1 RSV 350-1100 P 0/485

Komb.-Nr. 0 402 076 053

superseded 2.84

company Daimler-Benz

engine OM 407 177 kW (241 PS)

Test-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,5-12,7	0,4 (0,8)			
350	7,8-8,0	1,4-2,0	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-		350	7,9	-	-
	x	= 3,0					350	7,8-8,0		
ca.51 (2a)	10,7	1140-1150					435-495	= 2,0		
	4,0	1220-1250								
	1250	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limit: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	125,0-127,0 (122,0-130,0)	1140-1150*	600	107,0-111,0 (104,0-114,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

D7

D7

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 8,3o2
1. Edition
En

PE6P100 A 720 RS 447-1 RSV 250-750 P 7/479-1
Komb.-Nr. 0 401 876 269

supersedes
company DAF
engine DHT 825 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,7+0,1	14,3-14,5	0,35(0,6)			
250	5,3-5,5	0,9-1,3	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.17	250	5,4		
	X = 3,75						250	5,3-5,5		
ca.44 (2a)	11,7	790-795					250-295	= 2,0 **		
	4,0	810-825								
	950	0,3-1,7								

The numbers denote the sequence of the tests

** Set idle auxiliary spring at 2,0 mm.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	142,5-144,5 (140,5-146,5)	790-795*	-	-	-	-	-	-
					250	9,0-13,0 (6,5-15,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

D8

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BRE 23,1 a 1

1. Edition

En

PE 6 P 130 A 320/3 LS 449 RQV 300-750 PA 682
1- 6- 5- 4- 3- 2
0-75-120-195-240-315° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company: Breda
engine: ID 36 S-6 V
Komb.-Nr. 0 401 836 023

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,0+0,1	23,0-23,3	0,6(1,0)			
300	6,7-6,9	2,4-3,0	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	770	15,2-17,8	-	-	-	ca. 13	100 min.8,3		300	1,3-1,4
ca. 66	11,0	790-800					300 6,7-6,9		600	5,3-5,8
	4,0	835-865				325-435			750	8,1
	950	0-1,0				(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
750	230,0-233,0 (226,5-236,5)	790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 e

1. Edition

En

PES 6 P 110 A 720 LS 455 RQV 250-1100 PA 674

Komb.-Nr. 0 402 046 307

supersedes

company MAN

engine D 2566 MTE
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,8+0,1	15,9-16,2	0,4(0,75)			
250	6,9-7,1	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 13	100	min.8,5	300	1,4-1,7
ca. 46	10,5	1140-1150					250	6,9-7,1	800	5,0-5,2
	4,0	1205-1235					340-400	= 2,0	1100	7,9
	1350	0-1,0								
						(3a)				

Torque control travel a = 1,3 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4b): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1140-1150*	LDA	0,7 bar	100	215,0-235,0	800	12,8+0,1
800	159,0-162,0		650	160,0-164,0		211,0-239,0)	1100	11,5+0,1
	(156,5-164,5)			(157,0-167,0)			900	12,4+0,2
LDA	0,7 bar		LDA	0 bar			1000	11,7+0,3
1100	136,0-140,0		500	97,0-100,0				
	(133,0-143,0)			(94,5-102,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

D10

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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D10

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS 455 + RQV..PA 674	0,70	0 0,28 0,11	12,8-12,9 10,2-10,3 12,1-12,2 10,7-11,0

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D11

D11
En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 e 1

1. Edition

En

PES 6 P 110 A 720 LS 455 RQV 250-1100 PA 675

Komb.-Nr. 0 402 046 284

supersedes

company: MAN

engine: D 2566 MTE
206 kW
Bagger

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) RW = 9,0-12,0 mm - Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,7-14,9	0,4 (0,8)			
250	6,8-7,0	1,0-1,6	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 13	100	min.8,6	300	1,4-1,7
ca. 46	11,1	1140-1150					250	7,0-7,2	800	5,0-5,2
	4,0	1210-1240					340-400	= 2,0	1100	7,9
	1350	0-1,0				③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1100	147,0-149,0 (144,0-152,0)	1140-1150*	-	-	100	225,0-245,0 (221,0-249,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 CAT 10,5 a
1. Edition
En

PES 6 P 80 A 720 LS 456 RQV 350-1000 PA 609-1
Komb.-Nr. 9 400 087 292
Port-closing test with/without ROBO diaphragm

supersedes
company: Caterpillar
engine 3306 T
150 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test ISO

A. Fuel Injection Pump Settings

Port closing at prestroke 1,65-1,75 (1,60-1,80) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
990	12,5+0,1	11,1-11,2	0,2(0,35)			
350	6,7-6,9	1,0-1,7	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1010	15,2-17,8	-	-	-	ca.17	250	min.11,0	325	0,5-2,0
							350	5,9-6,1	400	2,7-3,1
ca. 69	11,5	1020-1030					510-570	=2,0	500	2,5-4,2
	4,0	1090-1120							800	6,1-6,6
	1220	0 - 1,0				300-400 (3a)			010	8,5

Torque control travel a 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel rev/min 8	Control rod travel mm 9
990	111,0-112,0 (109,5-113,5)	1020-1030 *	500	117,0-119,0 (114,0-118,0)	100	152,0-172,0 =17,6-18,6 mm RW	990	12,5+0,1
			700	114,5-116,5 (113,5-117,5	350	5,9-6,1 mm RW	500	13,5+0,1
							700	13,4+0,2
							850	12,8+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

D13

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

PES 6 P 120 A 720 LS 457 RQ 750 PA 566
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 2.83
company MAN
engine D 2566 MLE
198 kW

Test:ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6 = RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	20,2-20,4	0,5(0,9)			
250	6,1-6,3	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,5 4,0 900	750-755 776-789 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 750-755 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	202,0-204,0 (199,0-207,0)	-	-	-	-	-

Checking values in brackets

7.84

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,4 c 1

1. Edition

En

PES 6 P 120 A 720 LS 457 RQ 750 PA 661
Komb.-Nr. 0 402 046 267
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes _
company: MAN
engine: D 2566 MLE
198 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	20,2-20,4	0,5(0,8)			
250	6,1-6,3	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,5 4,0 900	750-755 776-789 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750 - 755 min-1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	202,0-204,0 (199,0-207,0)	-	-	-	-	-

Checking values in brackets

7.84

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MAN 11,4 d 1

1. Edition

En

PES 6 P 120 A 720 LS 457 RQV 250-1050 PA 672

Komb.-Nr. 0 402 046 280

supersedes–

company: MAN

engine: D 2566 MLE
220 kW
Schiff

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,0+0,1	17,4-17,8	0,5(0,9)			
250	6,3-6,5	1,5-2,1	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 11 (3a)	100	min.7,9	350	2,0-2,5
ca. 63	10,0	1090-1100					250	6,3-6,5	800	6,4-6,6
	4,0	1195-1225					385-445	= 2,0	1050	8,0-8,2
	1350	0-1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1050	174,0-178,0 (171,0-181,0)	1090-1100*	-	-	100	285,0-305,0 (281,0-309,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

D16

BOSCH

Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 d 2

1. Edition

En

PES 6 P 120 A 720 LS 457 RQV 250-1100 PA 672-1

Komb.-Nr. 0 402 046 281

supersedes_

company: MAN

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0+0,1	19,4-19,8	0,5(0,9)			
250	6,3-6,5	1,5-2,1	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 11	100	min.7,9	350	2,0-2,6
							250	6,3-6,5	900	6,8-7,0
ca. 64	11,0	1140-1150					385-445	= 2,0	1100	8,2
	4,0	1270-1300								
	1400	0-1,0								
						3a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed 2b	Fuel delivery characteristics high idle speed 5a 5b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 4a 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	194,0-198,0 (191,0-201,0)	1140-1150*	-	-	-	-	-	-
					250	15,0-21,0 (12,0-24,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D17

DAF

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 PEN 7,0 i 1

1. Edition

En

PE 6 P 110 A 320 RS 465 RSV 200-1200 P 1/305 R

Komb.-Nr. 0 401 876 268

supersedes

company Volvo-Penta

engine TD 70 175 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
700	12,5+0,1	13,0-13,2	0,4(0,75)			2,5 ±0,1
200	5,4-5,6	1,6-2,2	0,3(0,6)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 13	200	5,0	-	-
	x = 4,25						200	5,4-5,6		
ca. 55 (2a)	11,5	1240-1250					280-340	= 2,0		
	4,0	1270-1300								
	1480	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	130,0-132,0	1240-1250*	-	-	-	-	-	-
	(127,0-135,0)							

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D18

Test Specifications Fuel Injection Pumps ① and Governors

NPP 001/4 RVI 14,9 c
En 2. Edition

PES 8 P 120 A320 RS 466 RQV 275-1050 PA 665
1-8-4-2-7-3-6-5 je 45° ± 0,5° (± 75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 84
company RVI
engine MIVS 083530
268 KW
Komb.-Nr.0 402 048 042

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing mark 13° after port closing cylinder 1

Port closing at prestroke 2,8 - 2,9 (2,75 - 2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	9,6-9,7	19,2-19,4	0,5(0,9)			
275	3,5-3,7	1,7- 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.8	200	min. 5,2	275	1,5-1,6
ca.63	8,6	1105-1115					275	3,5-3,7	400	3,1-3,4
	4,0	1175-1205					275-325=	2,0	525	4,0-4,5
	1300	0-1,0							650	5,0-5,2
						(3a)			1050	7,7

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6) rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
LDA 1050	0,9 bar 192,0-194,0 (189,0-197,0)	1105-1115*	LDA 500	0 bar 119,0-121,0 (116,0-124,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7,84

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D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES8P..RS 466 +ROV...PA 665	0,90	0 0,30 0,26	9,6 - 9,7 7,7 - 7,8 9,0 - 9,1 8,1 - 8,3

Notes

(1) when n rev/min and gauge pressure bar (maximum full-load control rod travel)

D20

D20

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 MWM 10,8 a
1. Edition

En

PE 6 P 120 A 320 RS 468 RSUV 300-750 P 10 A 320
1-6 - 3- 2 - 5 - 4
0-90-120-210-240-330°+0,5°(+0,75°)

supersedes -
company MWM
engine D-TBD 234 V6
Komb.-Nr. 0 401 876 278

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil to ISO 4113

A. Fuel Injection Pump Settings

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	9,4-9,5	14,3-14,7	0,5(0,9)			
300	6,2-6,4	2,8-3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	→	ca.26	300	5,8	750	9,4-9,5
	x=4,0						300	6,2-6,4	320	10,6-11,2
ca.55	8,4	790-800					325-385	=2,0	450	9,4-9,5
(2a)	4,0	800-830								
	950	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ↓ rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	143,0-147,0 (140,0-150,0)	790-800*	-	-	100	260,0-290,0 =15,8-16,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 MWM 10,8 a 1
1. Edition

En

PE 6 P 120 A 320 RS 468 RSUV 300-1150 PO A 324 DR
1- 6- 3 - 2- 5 - 4
0-90-120-210-240-330°+0,5°(+0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company MWM
engine D-TBD 234 V6
Komb.-Nr. 0 401 876 271

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,3-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,4-9,5	14,3-14,7	0,5(0,9)			
300	6,2-6,4	2,8-3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x= 4,0	-	-	-	ca.24	300	5,8	-	-
							300 400-460	6,2-6,4 =2,0		
ca.66 (2a)	8,4	1190-1200								
	4,0	1230-1260								
	400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40° C (104° F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	143,0-147,0 (140,0-150,0)	1190-1200*	-	-	100	260,0-290,0 =15,8-16,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D22

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,9 a 4
1. Edition
En

PES 6 P 120 A 720-LS 470 RQ 250/1100 PA 658-9
Komb.-Nr. 0 402 046 308
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company MAN
engine D 2866 KUH
265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) Zyl.1.6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5±0,5	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	5,3	100	min.6,8	750	12,5-12,6
VH=	max.46°			4,0	1180-1210			250	5,2-5,4	100	11,3-11,4
				1300	0-1,0			315-355	=2,0	935	12,4-12,6
										990	11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,65 mm

Speed regulation: At 1145-1160 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel mm 7
LDA	1,0 bar	-	LDA	1,0 bar	100	225,0-245,0
750	238,0-240,0		650	239,0-245,0		(221,0-249,0)
	(235,0-243,0)			(236,0-248,0)		
LDA	1,0 bar		LDA	0 bar		
1100	213,0-219,0		500	139,0-141,0		
	(210,0-222,0)			(136,0-144,0)		

Checking values in brackets

7.84

D23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P .. LS 470 +RQ .. PA 658-9	1,0	0	12,5-12,6
		0,40	9,3-9,4
		0,24	11,1-11,2
			10,2-10,6

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,9 a
3. Edition
En

PE 6 P 120 A 720 LS 470 RQ 250/1100 PA 684
Komb.-Nr. 0 402 046 288
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.84
company: MAN
engine D 2866 KF 265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	5,3	100	min.6,8	750	12,5-12,6
VH = max. 46°				4,0	1180-1210			250	5,2-5,4	1100	11,3-11,4
				1300	0-1,0			315-355	= 2,0	935	12,4-12,6
										990	11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)	-	LDA 650	1,0 bar 239,0-245,0 (236,0-248,0)	100	225,0-245,0 (221,0-249,0)
LDA 1100	1,0 bar 214,0-218,0 (211,0-221,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)		

Checking values in brackets

9.84

EA

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..LS470 + RQ..PA684	1,0	 0 0,40 0,11	12,5 - 12,6 9,3 - 9,4 11,1 - 11,2 9,4 - 9,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

E2

E2 E0

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,4 f
1. Edition

En

PES 6 P 100 A 720 LS 471 RQ 250/1100 PA 685
Komb.-Nr. 0 402 046 287

supersedes-
company: MAN
engine: D 2566 UH/200
147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,05-3,25) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,3+0,1	9,4-9,6	0,35(0,6)			
250	4,9-5,1	1,2-1,8	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	11,3 4,0 1350	1145-1160 1215-1245 0-1,0	250	5,0	100 250 340-380	min.6,5 4,9-5,1 =2,0	700 1100	12,4-12,5 12,3-12,5

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
750	94,0-96,0 (92,0-98,0)	-	500 1100	85,0-88,0 (82,5-90,5) 100,0-104,0 (97,5-106,5)	100	115,0-135,0 (111,0-139,0)

Checking values in brackets

7.84

E3

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

E3

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 UNI 9.6 c
1. Edition

En

PES 6 P 110 A 320 RS 472 RQ 275/1300 PA 689
Komb.-Nr. 0 402 046 292

supersedes -
company: IVECO-Unic
engine: 8220-12
148 kW

Test acc. ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	8,9-9,0	9,6-9,9	0,4(0,75)			
275	4,2-4,4	1,5-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	7,9 4,0 1500	1345-1360 1400-1430 0-1,0	275	4,3	100 275 335-375	min.5,8 4,2-4,4 =2,0	1300 700 865 970	8,9-9,0 9,2-9,3 9,1-9,3 8,9-9,2

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1345-1360 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1300	96,0-99,0 (93,5-101,5)	-	700	87,0-91,0 (84,0-94,0)	100	145,0-165,0 (141,0-169,0)

Checking values in brackets

7.84

E4

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 11,6 a 1
1. Edition

En

PE 6 P 100 A 720 RS 473 RQ 300/1100 PA 327-8
Komb.-Nr. 0 401 846 494

supersedes
company Daimler-Benz
engine OM 355

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,1+0,1	12,5-12,7	0,35(0,6)			
300	7,9-8,1	1,7-2,3	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,8-14,6	650	14,2	12,1 4,0 1350	1145-1160 1190-1220 0-1,0	300	6,1	100 300 320-370	min.7,5 6,0-6,2 =2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
1100	125,0-127,0 (123,0-129,0)	-	600	117,0-121,0 (114,0-124,0)	100	150,0-170,0 (146,0-174,0)

Checking values in brackets

7.84

E5

E5

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 L
1. Edition

En

PE 6 P 120 A 320 RS 474 RQV 275-1200 PA 425-3
Komb.-Nr. 0 401 846 499
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company: RVI
engine: MIDS 0620 30
168 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,6+0,1	14,8-15,0	0,5(0,9)			
275	6,0-6,2	0,8-1,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 12	200	min.9,1	275	1,2-1,4
ca.65	11,6	1265-1275					275	6,0-6,2	400	2,9-3,4
	4,0	1380-1410							900	5,8-6,0
	1500	0-1,0				275-360			200	7,9
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	148,0-150,0 (145,0-153,0)	1265-1275*	750	137,0-143,0 (134,0-146,0)	100	105,0-125,0 (101,0-129,0)	-	-
1200	0,7 bar		750	0,7 bar				

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

E6

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

RVI 8,8 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P .. RS 474 + RQV..PA 425-3	0,70		12,6 - 12,7
		0	11,3 - 11,4
		0,20	12,3 - 12,4
		0,16	11,6 - 11,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PES 6 P 110 A 720 LS 477 RQ 250/1100 PA 685
Komb.-Nr. 0 402 046 304

supersedes
company: MAN
engine: D 2566 UH/200
177 kW

Test-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,1-3,2 (3,05-3,25) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,7+0,1	12,3-12,6	0,4 (0,75)			
250	6,0-6,2	1,5-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,7	1145-1160	250	6,1	100	min.7,6	1100	11,7-11,8
				4,0	1210-1240			250	6,0-6,2	500	11,7-11,9
				1350	0-1,0			370	410=2,0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
800	123,0-126,0 (120,5-128,5)	-	1100	127,0-133,0 (124,0-136,0)	100	110,0-130,0 (106,0-134,0)
			500	113,0-119,0 (110,0-122,0)	250	15,0-20,0 (12,5-22,5)

Checking values in brackets

7.84

E8

Test Specifications Fuel Injection Pumps and Governors

② PP 001/4 MB 10,0 b
1. Edition
En

PE 5 P 120 A 720 RS 480 RQ 250/1100 PA 269 R
1-2-4-5-3 je 72 ° ± 0,5 ° (± 0,75 °)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company: Mercedes-Benz Bras.
engine: OM 355-5 O
Komb.-Nr. 9 400 087 311

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,2+0,1	20,1-20,3	0,5 (0,9			
250	5,9-6,1	1,3-1,9	0,8 (1,2			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	11,2 4,0 1350	1125-1145 1190-1220 0 - 1,0	250	6,0	100 250 385	min.7,0 5,9-6,1 425=2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1125-1145 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
1100	201,0-203,0 (198,0-206,0)	450	500	202,0-208,0 (199,0-211,0)	100	335,0-355,0 =17,6-18,6 mm RW

Checking values in brackets

7.84

E9

Test Specifications Fuel Injection Pumps and Governors ② 40

UPP 001/4 MB 9,6 a
9. Edition
En

Testoil-ISO 4113

PE 6 P 100 A 320 LS 805 RQ 300/1250 PA 187 R (1)
RQV 300-1250 PA 227 R (2)

supersedes 7.83
company: Daimler Benz
engine: OM 401 ●

6 - 3 - 5 - 2 - 4 - 1
0 -45 -120-165-240-285 ±0,5°(±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,0+0,1	10,6 - 10,8	0,3(0,6)			
300	7,9-8,1	1,9 - 2,5	0,3(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

RQ..187 R (1)

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,8-14,6	650	14,2	10,0	1295-1310	300	8,0	100	min. 9,5	1250	11,1-11,2
								300	7,9-8,1		
1450	0 - 1			4,0	1330-1360			420-450	=2,0	600	11,1-11,3
								500	0 - 1		

Torque-control travel on flyweight assembly dimension a = - mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
(1) 1250	107,0 - 109,0 (105,0 - 111,0)	600	600	85,0 - 90,0 (83,0 - 92,0)	100	110 - 130
					1355	Streug. max.4 (6)

Checking values in brackets

8.84

E10

B. Governor Settings

Upper rated speed: Degree of deflection of control lever (1)	Upper rated speed: rev/min Control rod travel mm (2)	Upper rated speed: Control rod travel mm (1a) rev/min (2a) (3)	Intermediate rated speed: Degree of deflection of control lever (4)	Intermediate rated speed: rev/min (5)	Intermediate rated speed: Control rod travel mm (6)	Lower rated speed: Degree of deflection of control lever (7) (3a)	Lower rated speed: rev/min (8)	Lower rated speed: Control rod travel mm (9)	Sliding sleeve travel (1): rev/min (10)	Sliding sleeve travel (1): mm (11)
max.	1290	15,2-17,8	-	-	-	ca. 12	100	min.9,5	250	0,2-0,6
							300	7,9-8,1	580	3,0-3,3
ca. 66	10,0	1290-1300							920	5,1-5,5
	4,0	1330-1360							1250	7,8
	1450	0 - 1,0				325-450				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min (1)	Full-load delivery: cm³/1000 strokes (2)	Rotational-speed limitation intermediate speed (2b) (4a): rev/min (3)	Fuel delivery characteristics high idle speed (5a) (5b): rev/min (4)	Fuel delivery: cm³/1000 strokes (5)	Starting fuel delivery idle switching point (6): rev/min (6)	Starting fuel delivery: cm³/1000 strokes (7)	Torque-control travel (5): rev/min (8)	Torque-control travel: Control rod travel mm (9)
(2) 1250	106,0-108,0 (104,0-110,0)	1290-1300*	600	83,0 - 88,0 (80,0 - 92,0)	100	110 - 130		
						100-250 (80-270)		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting: Gauge pressure = bar	Measurement: Gauge pressure = bar	Control rod travel - diminution / difference mm

En

E11

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 IHC 13,4 e 1
1. Edition

En

PES 6 P 110 A 420 LS 3037 RSV 350-1050 P2/423 DR

supersedes -
company IHC
engine DT1-817 C
Komb.-Nr. 0 402 076 708

Values only apply to test nozzle-and-holder assembly 1 688 901 016 and fuel-injection test tubing 9 681 271 027

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Inlet pressure 2,8 bar

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,5+0,1	20,5-20,7	0,4			
350	4,6-4,7	2,0-2,5				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-			**	1050	11,5-11,6
						ca.23	100	20,0-21,0	850	12,6-12,7
							200	11,0-21,0	750	12,9-13,0
ca.45 (2a)	10,5	1090-1100					350	4,6		
	4,0	1145-1175					360-420	= 2,0		
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
LDA 1050	0,8 bar	1090-1100*	LDA 750	0,8 bar	100	185,0-205,0	-	-
	205,0-207,0			225,0-231,0				
	(203,0-209,0)			(223,0-233,0)	350	20,0-25,0		
			LDA 800	0 bar				
				145,0-153,0				
				(142,0-156,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

With control lever in end position: increase speed until 4 mm control-rod travel is reached. Then adjust idle spring so that it makes contact and screw out by one turn.

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

ER

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 800 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES6P..LS3037 + RSV..P2/423DR	0,18-0,24	0,56-0,58	Control-rod travel aspiration + 0,5 mm Full-load control-rod travel - 0,5 mm

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

E13

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 MWM 39,8 c
3. Edition

En

(1) PE 6 P 130 A 300 LS 3051
(2) PE 6 P 130 A 320 LS 3052 RSUV 300-750 P9A 332/1 R
(3) PE 6 P 130 A 300 LS 3052
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 1.83
company MWM-Südbremse
engine TBD 602-V 12 K
Komb.-Nr. 0 401 816 703 (1)
0 401 876 711 (2)
0 401 816 705 (3)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Cam sequence and angular cam spacing, Instructions 2

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 19,5-22,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0+0,1	31,7-32,1 (31,4-32,4)	0,5 (0,9)			
300	5,4-5,6	4,6-5,4	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 29	300	4,9	700	12,0-12,1
	x =	5,25							325	13,2-13,8
							300	5,3-5,5	450	12,0-12,1
ca. 70	11,0	790-800					325-385	= 2,0		
(2a)	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests without (1 u. 3) and

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting/Idle delivery (5): rev/min 6	cm³/1000 strokes / mm RW 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
		790-800*			100	19,5-21,0	-	-

The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet. Pumps (1) and (2) or (1) and (3) operate in tandem.

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

E14

E14

Cam sequence and angular cam spacing.

1- 5- 3 - 4 - 2 - 6 (1)
0-15-120-135-240-255° ± 0,5° (± 0,75°)

1- 6- 2 - 4 - 3 - 5 (2 u. 3)
0-15-120-135-240-255° ± 0,5° (± 0,75°)

E15

EAS

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 10,0 q 5

1. Edition

En

PE 6 P 110 A 320 RS 3108 RQV 325-1100 PA 232

Komb.-Nr. 0 401 846 753

supersedes company Volvo-BM engine TD 100 G

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,5+0,1	14,8-15,0	0,4(0,8)			
325	3,9-4,1	1,6-2,0	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1175	15,2-17,8	-	-	-	ca. 11	100	min.6,0	275	1,2-1,4
ca. 44	10,5	1140-1150					325	3,9-4,1	550	3,3-3,8
	4,0	1220-1250					340-400=2,0		825	5,3-5,6
	1350	0-1,0							1100	8,0
						③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 700	0,75 bar 148,0-150,0 (145,0-153,0)	1140-1150*	LDA 700	0 bar 114,0-118,0 (111,0-121,0)	100	170,0-200,0 =20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung
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E16

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 3108 +RQV..PA 232	0,75	0 0,46 0,34	11,6-11,7 9,7-9,8 11,1-11,2 10,3-10,5

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

E17

En E17

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d

4. Edition

En

Testoil-ISO 4113

PE 10 P 110 A 320 LS 3818 RQV 300-1150 PA 486-2

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10- 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

superseded 8.84
company Daimler-Benz
engine OM 423
261 kW (355 PS)
Komb.-Nr. 0 401 849 706

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	12,1 - 12,6	0,4(0,8)			
300	8,5-8,7	1,4 - 2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 19	100	min.10,2	250	1,0-1,2
							300	8,5-8,7	550	3,4-3,7
ca. 65	11,1	1190-1200							850	4,9-5,3
	4,0	1240-1270				330-470			1150	7,6
	1400	0 - 1,0				③a				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point ⑥ rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1150	124,0-126,0 (121,5-128,5)	1190-1200 *	600	110,0-114,0 (107,0-117,0)	100	140,0-160,0 (136,0-164,0)	1150	12,1+0,1
							600	12,5+0,1
			900	118,0-125,0 (115,0-126,0)			900	12,4+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

E18

E18

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAC 10,9 c
1. Edition

En

US-PES 6 P 120 A 720/3 RS 6008 US-ROV 300/500-1050 PA 591-3 K
Komb.-Nr. 9 400 231 181
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company Mack
engine EE6-335
250 kW

Note VDT-I-MAC 002!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2.3,3 (3,15-3,35) mm (from BDC)

PLE-Maß=0,740"-0,820"

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	14,0+0,1	25,9-26,1	0,5(0,9)			
300	5,8-6,0	13,0-13,1	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20	250	9,8-11,3		
ca.63	13,0	1090-1100					300	7,9-8,1		
	4,0	1195-1225					400	3,8-5,2		
	1250	0-1,0					710-770	=2,0		
						③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation intermediate speed rev/min ④a 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1050	259,0-261,0 (256,0-264,0)	1090-1100*	800	219,5-225,5 (216,5-228,5)	100	120,0-180,0	1050	14,0
			600	212,5-218,5 (209,5-221,5)			1000	13,8+0,1
							900	13,3+0,1
							700	12,7+0,1
							500	12,5+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

BOSCH
Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
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E19

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 z

1. Edition

En

PE 6 P 120 A 720 RS 7013 RQV 200-1000 PA 715
Komb.-Nr. 9 400 087 303
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company Saab-Scania Brasilien

engine DSE 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	15,0+0,1	26,8-27,0	0,6 (0,9)			3,3±0,1
225	5,4-5,6	4,3-4,7	0,3 (0,6)			(3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca. 12	100 225	min.6,9 5,4-5,6		
ca. 62	14,0 4,0 1300	1040-1050 1170-1200 0-1,0				225-365 (3a)	370-430	=2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	268,0-270,0 (265,0-273,0)	1040-1050*	1000	260,0-268,0 (257,0-271,0)	100	300,0-350,0 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

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E20

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 f

1. Edition

En

PE 8 P 120 A 920/4 LS 7014 RQV 250-1000 PA 716
Komb.-Nr. 9 400 087 304
1-2-7-3-4-5-6-8 je 45° ± 0,50° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company Saab-Scania Brasilien
engine DSE 14

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	15,0+0,1	26,8-27,0	0,6(0,9)			3,3± 0,1
225	5,4-5,6	4,3-4,7	0,3(0,6)			(3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca.12	100	min.6,9		
							225	5,4-5,6		
ca.62	14,0	1040-1050					370-430	= 2,0		
	4,0	1170-1200								
	1300	0 - 1,0				225-365 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
700	268,0-270,0 (265,0-273,0)	1040-1050*	1000	260,0-268,0 (257,0-271,0)	100	300-350 = 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

E21

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

ELA

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 6
3. Edition
En

Testoil-ISO 4113

VE 4/9 F 2250 R 134-4
0 460 494 137

Overflow temperature 45° C

superseded 12.83
company VWW
engine: 086 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,2 - 3,7	mm	0,75	
1.2 Supply-pump pressure	1500	4,6 - 5,2	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	42,5 - 43,5	cm³/1000 strokes	0,75	2,5 (3,0)
Full-load delivery without charge-air pressure	600	22,5 - 23,5	cm³/1000 strokes	0	
1.4 Idle regulation	475	6,0 - 10,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2525	9,0 - 15,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 35	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2250
LDA=0,75 bar	mm	1,3-2,1 (1,0-2,4)	(2,8-4,2)	6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min	600		2250
LDA=0,75 bar	bar (kgf/cm²)	2,5-3,1		6,5-7,1
Overflow delivery	n = rev/min	600 (0 bar)		2250 (0,75 bar)
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2750	max. 3,0		0,75
	2525		(8,0-16,0)	0,75
	2250	37,5-39,5	(36,2-40,8)	0,75
	1500		(40,7-45,3)	0,75
	1000 *	32,5-33,5	(30,7-35,3)	0,30
	600		(20,0-26,0)	0
switch-off				
elektr.	400	0		
Idle stop	475		(4,0-12,0)	
	1200	max. 4,0		
	1125 **	22,0-24,0		
End stop	400	min. 21		
	500	max. 29		
2.4 Solenoid	max. cut-in voltage			
	test voltage			

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2 - 3,4
KF	5,7 - 6,0
MS	1,2 - 1,4
SVS	3,2
A	
B	

Observations

*

**

Please note instructions on sheet 2.

E22

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

* Manifold-pressure compensator stroke = 4,0

** Setting point for EGR

Pull control lever toward full load untill gauge fits over driver and housing cover web. Measure delivery.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,9 e

2. Edition

En

VE 4/9 F 2300 R 141
0 460 494 132
DHK: 1 688 901 022/130 bar

Overflow temperature 45° C
Test pressure line
6x2x450 mm / 1 680 750 073

superseded 12.83
company: Fiat
engine: X 8/43

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

Test:ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,3-4,7	mm		
1.2 Supply-pump pressure	1500	5,6-6,2	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure			cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	31,0-32,0	cm³/1000 strokes		2,5(3,0)
1.4 Idle regulation	350	9,0-13,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	2500	11,0-17,0	cm³/1000 strokes		
1.6 Start	100	min. 55,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1500	2300
	mm	1,7-2,5(1,4-2,8)	(3,8-5,2)	7,1-7,9(6,8-8,2)
2.2 Supply pump	n = rev/min	400		2300
	bar (kgf/cm²)	2,8-3,4		7,4-8,0
Overflow delivery	n = rev/min	400		2300
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2600	6,2-6,8 (6,1-6,9)	
	2500	(10,0-18,0)	
	2400	21,0-27,0(20,0-28,0)	
	2250	32,7-34,7(31,4-36,0)	
	1500	(29,2-33,8)	
	1000	30,7-33,3(29,0-35,0)	
	600	32,0-35,0(30,5-36,5)	
switch-off			
Idle stop	350	(7,0-15,0)	
	400	max. 4,0	
	540	0	
End stop	300	min. 45,0	
	400	max. 46,0	

2.4 Solenoid

max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,1-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	2,8
XK	20,2-22,2
XL	10,3-13,7

Observations

E24

E24

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,9 b

3. Edition

En

VE 4/9 F 2300 R 162

0 460 494 153

DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

Test pressure line
6x2x450 mm / 1 680 750 073

supersedes: 07.84
company: Peugeot
engine: XUD 9

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2000	7,8-8,2	mm		
1.2 Supply-pump pressure	1250	3,9-4,5	bar (kgf/cm²)		
1.3 Full load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure *	1250	29,5-30,5	cm³/1000 strokes		2,5(3,0)
1.4 Idle regulation	A 550	2,5-3,5	cm³/1000 strokes		B 2,5(3,0)
1.5 Full-speed regulation	2400	20,0-26,0	cm³/1000 strokes		
1.6 Start	100	min. 44,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1250				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1250	2000
	mm	0,5-1,5(0,3-1,7)	3,4-4,2(3,1-4,5)	(7,3-8,7)
2.2 Supply pump	n = rev/min	700		2000
	bar (kgf/cm²)	2,3-2,9		5,9-6,5
Overflow delivery	n = rev/min	600		2300
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650	max. 7,0		
	2500	11,5-17,5	(10,5-18,5)	
	2400		(19,0-27,0)	
	2250	30,0-32,0	(28,7-33,2)	
	2000	30,6-32,6	(29,3-33,8)	
	1250		(27,7-32,2)	
	700	29,5-32,5	(28,0-34,0)	
switch-off	2300	0		
Idle stop	A 550	2,5-3,5		
	B 375	8,5-10,5	(5,5-13,5)	
	C 470	8,0-10,5	(5,0-13,0)	
End stop	200	min. 40,0		
	300	max. 35,0		

2.4 Solenoid

max cut-in voltage xxx min. 10 V

test voltage xxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,0
A	
B	

Observations

*Residual delivery setting Idle setting (LFG) as per VDT-I-460135

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,7 a

3. Edition

En

Testoil-ISO 4113

VE 4/8 F 2300 R 171

0 460 484 010

DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

Test pressure line
6x2x450 mm / 1 680 750 073

supersedes: 07.84
company: Peugeot
engine: XUD 7

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1250	3,8- 4,2	mm		
1.2 Supply-pump pressure	1250	4,3- 4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1250	29,5-30,5	cm³/1000 strokes		2,5(3,0)
1.4 Idle regulation *	A 550	3,5- 4,5	cm³/1000 strokes		B 2,0(3,0)
1.5 Full-speed regulation	2400	19,0-25,0	cm³/1000 strokes		
1.6 Start	100	min. 42,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1250				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1250	2000
	mm	0,8-1,6(0,5-1,9)	(3,3-4,7)	8,0-8,8(7,7-9,1)
2.2 Supply pump	n = rev/min	700		2000
	bar (kgf/cm²)	2,8-3,4		6,4-7,0
Overflow delivery	n = rev/min			2300
	cm³/10 s			55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2650	max. 7,0	
	2500	11,5-17,5 (10,5-18,5)	
	2400	(18,0-26,0)	
	2250	28,0-30,0 (26,7-31,3)	
	2000	29,0-31,0 (27,7-32,3)	
	1250	(27,7-32,3)	
	700	29,5-32,5 (28,0-34,0)	
switch-off	2300	0	
Idle stop	A 550	3,5 - 4,5	
	B 350	8,0 -12,0 (6,0-14,0)	
	C 470	8,0 -12,0 (6,0-14,0)	
End stop	200	min. 44,0	
	300	max. 34,0	

2.4 Solenoid — max. cut-in voltage

test voltage xx min 10 V
XXXXXXXXX rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,2-5,5
MS	1,3-1,5
SVS	max. 3,0
A	
B	

Observations

*Residual delivery setting Idle setting (LFG) as per VDT-I-460135

F2

F2

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 5,9 g
En 2. Edition

VE 6/12F 1400 R173
0 460 426 038
DHK: 1688 901 016/207+3 bar

Overflow temperature 45° C

supersedes 8.84
company: Cummins
engine: 6 BT-590

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1100	2,1-2,5	mm	0,75	
1.2 Supply-pump pressure	1100	4,3-4,9	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1100	86,0-87,0	cm³/1000 strokes	0,75	4,0 (4,5)
Full-load delivery without charge-air pressure	500	73,5-74,5	cm³/1000 strokes	0	
1.4 Idle regulation	375	20,0-26,0	cm³/1000 strokes	0	3,5 (4,5)
1.5 Full-speed regulation	1600	31,0-39,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 97,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,75 bar	n = rev/min	900	1100	1400
	mm	0,4-1,2 (0,1-1,5)	(1,6-3,0)	2,9-3,7 (2,6-4,0)
2.2 Supply pump LDA = 0,75 bar	n = rev/min	500		1400
	bar (kgf/cm²)	2,0-2,6		5,6-6,2
Overflow delivery	n = rev/min	500		1400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1750	max. 1,5		0,75
	1600		(30,0-40,0)	0,75
	1400	79,5-82,5	(78,0-84,0)	0,75
	1250	82,5-85,5	(81,0-87,0)	0,75
	1100		(83,5-89,5)	0,75
	* 750	80,0-81,0	(77,5-83,5)	0,3
	500		(70,3-77,7)	
switch-off				
Idle stop	450	max. 1,5		
	375		(18,0-28,0)	
	300	35,0-43,0	(34,0-44,0)	
End stop	130	min. 97,0		
	200	max. 85,0		

2.4 Solenoid — max. cut-in voltage xx min. 10 Volt
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,1-5,9
MS	1,4-1,6
SVS	2,4
A	
B	

Observations

Stop check electric shutoff device at 375 min/1.

Manifold-pressure compensator stroke = 4,5 mm

F3

F3

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 SOA 3,7 a
1. Edition

En

PES 4 A 80 D 410/3 RS 1183 RSV 325-1150 A 8 B 493-1 L

Komb.-Nr. 0 400 464 095

supersedes
company Sonacome
engine F 4 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,6+0,1	5,0-5,1	0,2(0,35)			
325	9,3-9,5	1,7-2,3	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	325	8,9	1150	10,6-10,7
	x = 4,0						100	min. 19,5	450	11,6-11,7
ca. 54	9,6	1190-1200					325	9,3-9,5	900	11,0-11,3
(2a)	4,0	1230-1260					485-545	= 2,0		
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1150	50,0-51,0 (48,5-52,5)	1190-1200*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 SOA 3,7 a 1
1. Edition

En

PES 4 A 75 D 410/3 RS 1183 RSV 325-1400 A 8 B 742 - 1L supersedes
Komb.-Nr. 0 400 464 104 company Sonacome
engine F 4 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,0+0,1	5,5-5,6	0,2(0,35)			
325	7,9-8,1	0,8-1,4	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	325	7,5	1440	11,0-11,1
	X =						100	min. 19,5	400	12,0-12,1
ca. 71	10,0	1440-1450					325	7,9 - 8,1	800	11,7-12,0
(2a)	4,0	1485-1515					640 -	700 - 2,0		
	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat (Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1400	55,0-56,0 (53,5-57,5	1440-1450*	800	50,0-52,0 (48,5-53,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

Test Specifications Fuel Injection Pumps and Governors

40

(1A)

WPP 001/4 SOA 5,6 a
1. Edition

En

PES 6 A 75 D 410/3 RS 1197 RSV 325-1400 A 8 B 742-1 L

Komb.-Nr. 0 400 466 079

supersedes
company Sonacome
engine F 6 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	12,4+0,1	5,9-6,0	0,25(0,4)			
325	9,4-9,6	0,9-1,5	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	-	325	9,0	1380	12,4-12,5
	x = 4,75								500	13,2-13,3
							100	min. 19,5	865	12,8-13,0
ca. 67	11,4	1420-1430					325	9,4-9,6		
(2a)	4,0	1540-1570					680-740	= 2,0		
	1705	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1380	58,5-59,5 (57,0-61,0)	1420-1430*	800	51,5-53,5 (50,0-55,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

F6

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MWM 5,9a
1. Edition

En

PES 6A80D320RS 1271 RSV 350-1500A2B2122R

Komb.-Nr. 9 407 083 274

supersedes -
company MWM
engine D 229-6
94 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1480	9,7-9,8	5,6-5,7	0,25(0,4)			
350	6,9-7,1	0,7-1,1	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 X =	0,3-1,0	-	-	-	ca.18	350	6,5	1480	9,7-9,8
							100	min.19,0	1000	10,2-10,5
							350	6,9-7,1	800	10,4-10,6
ca.51	8,7	1520-1530					650-710	= 2,0	500	10,5-10,6
(2a)	4,0	1555-1585					810	max.1,0		
	1740	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1480	55,5-56,5 (54,0-58,0)	1520-1530*	800	53,0-55,0 (51,0-57,0)	100	19,0-21,0 mm RW	350	7,0
1000	55,5-57,5 (53,5-59,5)		500	48,5-50,5 (46,5-52,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

F7

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MWM 5,9 a1
1. Edition
En

PES 6 A 80 D 320 RS 1271 RSV 350-1150 A 2 B 2129-1R
Komb.-Nr. 9 407 083 281

supersedes -
company MWM
engine D 229-6
77 kW (105 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,4-9,5	5,0-5,1	0,25(0,4)			
350	6,9-7,1	0,7-1,0	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800 X =	0,3-1,0	-	-	-	ca.19	350	6,5	1150	9,4-9,5
							100	min.19,0	900	10,3-10,5
							350	6,9-7,1	500	11,0-11,1
ca.44 (2a)	8,5	1170-1180					680-740	= 2,0		
	4,0	1210-1240					800	max.1,0		
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	49,5-50,5 (48,0-52,0)	1170-1180*	900	51,5-53,5 (49,5-55,5)	100	19,0-21,0 mm RW	350	7,0
			500	53,0-55,0 (51,0-57,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

F8

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 EIC 5,9 b
4. Edition
En

Testoil-ISO 4113

PES 6 A 80 D 320 RS 1280 RSV 300-1150 AOB 2001 DR
Komb.-Nr. 0 400 476 071
1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes 3.84
company: Eicher
engine: EDK 6-4 Saugmotor
77 kW (105 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) 2,15-2,25 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	8,9-9,0	5,1 - 5,2	0,2(0,35)			
300	6,1-6,3	0,7 - 1,3	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 29	300	5,7	1130	8,9-9,0
	X =	6,0					100	min.19,5	795	9,2-9,4
ca. 53	1170-1180=7,9						300	6,1-6,3	500	9,5-9,6
(5)	1215-1245=4,0						420 -480= 2,0			
	1380=	0,3-1,7					650	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1130	51,5 - 52,5 (50,0 - 54,0)	170-1180*	900	48,5 - 51,5 (47,0 - 53,0)	100	19,5-21,0 mm RW	300	6,2
			500	46,5 - 48,5 (45,0 - 50,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

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Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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F9

Test Specifications Fuel Injection Pumps and Governors

40

(1A)

WPP 001/4 KHD 1 g 10
2. Edition

En

PES 2 A 80 D 310/3 RS 1322 RSV 325-1150 A 8 B 2011-1 L
Komb.-Nr. 0 400 462 054

supersedes 6.83
company KHD
engine F 2 L 912
25 kW bei
2300 min^{-1}
tractor D 3607-
S 33

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,1+0,1	5,9-6,0	0,25(0,4)			
325	8,9-9,1	1,2-1,8	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.26	325	8,5	1150	11,1-11,2
	x = 6,0						100	min.19,5	500	12,0-12,1
							325	8,9-9,1	1010	11,5-11,7
ca.60	9,9	1190-1200					690-750	=2,0		
(2a)	4,0	1320-1350								
	1480	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	59,0-60,0 (57,5-61,5)	1190-1200*	750	57,0-59,0 (55,0-61,0)	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 STE 6,0 h 6
1. Edition

En

PE 6 A 85 D 412 RS 2303 Y
Komb.-Nr. 0 400 656 159

RQV 250-1400 AB 879 DL

supersedes
company Steyr
engine WD 612.90
154 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	14,2+0,1	9,6-9,7	0,3(0,45)			
250	8,9-9,1	1,1-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1450	15,2-17,8	-	-	-	ca. 13	100	min.10,4	200	0,5-0,7
ca. 47	13,2	1440-1450					250	8,9-9,1	600	3,3-3,7
	4,0	1580-1610					380-440	=2,0	1000	5,7-5,9
	1700	0-1,0					500	max.1,0	1400	8,4
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 96,0-97,0 (94,0-99,0)	1440-1450*	LDA 800	0,7 bar 91,5-94,5 (89,5-96,5)	-	-	-	-
			LDA	0 bar 12,5-12,6 mm RW				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

F11

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

CAA

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1400 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6A..RS2303Y + RQV..PA879DL	0,70	0 0,28 0,22	14,2-14,3 12,5-12,6 13,8-13,9 12,9-13,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

F12

F12 En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 STE 6,0 h 5
1. Edition
En

PE 6 A 85 D 412 RS 2303 Z RQV 250-1400 AB 879 DL
Komb.-Nr. 0 400 656 153

supersedes
company Steyr
engine WD 612-68 u. -72
143 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC); RW = 9,0-12,0

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	13,2+0,1	8,6-8,7	0,3(0,45)			
250	8,6-8,8	1,2-1,7	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1400	15,2-17,8	-	-	-	ca. 13	100	min.8,5	200	0,5-0,7
ca. 49	12,2	1440-1450					250	6,4-6,6	600	3,3-3,7
	4,0	1585-1615					320-380	=2,0	1000	5,7-5,9
	1700	0-1,0					500	max.1,0	1400	8,4
						③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1400	0,5 bar 85,5-86,5 (83,5-88,5)	1440-1450*	LDA 800	0,5 bar 80,0-83,0 (78,0-85,0)	100	133,0-143,0 (130,0-146,0)	-	-
			LDA 500	0 bar 56,0-59,0 (54,0-61,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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FA3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1400 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6A..RS2303Z + RQV..AB879 DL	0,50	0,17 0,15 0	13,2-13,3 12,9-13,0 12,2-12,5 12,0-12,1

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PES 6 A 85 D 410/3 RS 2415 RQ 300/1250 AB 935 DL

Komb.-Nr. 0 400 836 024

supersedes 9.82
company: KHD
engine BF 6 L 913 T
96 kW
/ 2500 min^{-1}

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 (1,85-2,05) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,1-11,2	8,0 - 8,1	0,3(0,45)			
300	7,3-7,5	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
800	19,2-10,8	800	20,0	10,1	1295-1310	300	7,4	100	min.8,8	1250	11,1-11,2
VH =	max. 64°			4,0	1365-1395			300	7,3-7,5	800	12,3-12,4
				1500	0 - 1,0			700	max. 1,0	910	12,0-12,2
								545-	585=2,0	1050	11,3-11,6

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
1250	80,0 - 81,0 (78,0 - 83,0)	-	800	69,5 - 72,5 (67,5 - 74,5)	100	19,0 - 21,0 mm RW

Checking values in brackets

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Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 5 A 80 D 410/3 RS2526 EP/RSV 325-1150 A3 B2014DL

supersedes 5.78

company: K H D

engine: F5 L912 63kW - 85PS

Komb.-Nr. 0 400 865 016

1 - 3 - 5 - 4 - 2

0 - 72-144-216-288° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 2526 cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8	5,5 - 5,6	0,2(0,35)			
	+0,1					
325	9,0-9,2	0,9 - 1,5	0,2(0,3)			
775/850	- - -	C, 4 - 5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.21	325	5,0		±0,1
	X =	4,75					100	min. 19	1150	11,8
ca.55	10,8	1190-1200					325	5,4-5,6	950	12,1
(5)	4,0	1235-1265					390-450	= 2,0	775	12,7
	1350	0,3 - 1,7					500	0 - 1	450	12,8

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1150	55,5 - 56,5 (54,0 - 58,0)	1190-1200*	775	57,0 - 59,0 (55,5 - 60,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3 n 1
3. Edition
En

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2575 RSV 250-1200 A5B 2151 L
Komb.-Nr. 0 400 676 171
Specifications apply to test tubing 1 680 750 015

superseded 6.83
company DAF
engine DH 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,4+0,1	7,3 - 7,5	0,35(0,6			
250	6,0-6,2	0,7 - 1,1	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 24	250	5,6	1200	10,4+0,1
	X =	5,0					250	6,0-6,2	500	11,1+0,1
ca.58 (5)	9,4	1240-1250					635-695	= 2,0	800	11,1+0,1
	4,0	1340-1370							940	10,7+0,3
	1505	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to .. rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1200	73,0-75,0 (71,0-77,0)	1240-1250*	800	74,5-77,5 (72,0-80,0)	100	121,5-131,5 bei 19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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BOSCH
Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.

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Test Specifications Fuel Injection Pumps and Governors (1A)

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WPP 001/4 DAF 6,2 n

5. Edition

En

PE 6 A 90 D 320 RS 2577 RSV 250-750 A 7 B 2125 R

supersedes 5.84
company DAF
engine DT 615

Komb.-Nr. 0 400 676 167

Specifications apply to test tubing 1 680 750 015 !

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing difference between control-rod travel 9 mm and max. =2,5-3,5° camshaft

Port closing at prestroke (2,15-2,35) 2,20-2,30 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,0+0,1	7,5 - 7,7	0,4 (0,55			
250	5,9-6,1	0,8 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca.15	250	6,0	-	-
	X =	5,0				**		
ca.40 (2a)	10,0	770-780			260-320	= 2,0		
	4,0	785-805						
	955	0,3-1,7						

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	75,0-77,0 (73,0-79,0)	760-770*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 h

5. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 410 LS2587 RQV 300-1150 AB1088L (1)
PE 8 A 95 D 410 LS2588 RQV 300-1150 AB1088L (2)
PE 10 A 95 D 610/4LS2589 RQV 300-1150 AB1047DL (3)
PE 12 A 95 D 610 LS2590 RQV 300-1150 AB1047DL (4)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

superseded 6.83
company K H D
engine F 6 L 413 FW
(1) (102kW-139PS)
(2) F 8 L (136kW-185PS)
(3) F10 L (170kW-231PS)
(4) F12 L (204kW-277PS)

bei 2300 min^{-1}

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC) Tunnelling or mining vehicles

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,2	7,8 - 8,0	0,3(0,6)			
300	6,2-6,3	1,4 - 2,0	0,3(0,5)			
800/1000	- - -	C, 4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) 2587 mit 1088L

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1150	15,2-17,8	- -	-	-	ca.11	100	min.7,5	300	1,2-1,3
	1350	0 - 1					300	5,9-6,1	600	3,1-3,4
							610-670	=2,0	1190	8,5
ca.64	8,0	1190-1200								
	4,0	1220-1250								
						320-400 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	77,5 - 79,5 (75,5 - 81,5)	1190-1200*	800	80,5 - 82,5 (79,0 - 84,0)	100	119,0-129,0	1150	9,0-9,1
							800	9,5-9,6
							500	9,5-9,6

Checking values in brackets

* 1 mm less control rod travel than col. 2

Set control-rod stop to contact at 500 min/1

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BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

FA3

Cam sequence and angular cam spacing

1 - 6 - 5 - 4 - 3 - 2
0 - 75-120-195-240-315° (1)

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3
0 - 45-90-135-180-225-270-315° (2)

1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2
0 - 27 - 72-99-144-171-216-243-288-315° (3)

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12
0 - 15-60-75-120-135-180-195-240-255-300-315° (4)

Tolerance $\pm$ 0,50 ($\pm$0,75)

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B. Governor Settings

Upper rated speed: Degree of deflection of control lever (1)	rev/min Control rod travel mm (2)	Control rod travel mm rev/min (1a) (2a)	Intermediate rated speed: Degree of deflection of control lever (4)	rev/min (5)	Control rod travel mm (6)	Lower rated speed: Degree of deflection of control lever (7)	rev/min (8)	Control rod travel mm (9) (3)	Sliding sleeve travel (1): rev/min (10)	mm (11)
max.	1150	15,2-17,8	-	-	-	ca. 11	100	min. 7,5	300	1,2-1,3
							300	5,9-6,1	600	3,1-3,4
							610- 670	=2,0	1190	8,5
ca.64	8,0	1190-1200								
	4,0	1220-1250								
	1350	0 - 1,0				320-400 (3a)				

Torque control travel a 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F) (2): rev/min (1)	cm³/1000 strokes (2)	Rotational speed limitation intermediate speed (2b): rev/min (4a) (3)	Fuel delivery characteristics high idle speed (5a): rev/min (4)	cm³/1000 strokes (5b) (5)	Starting fuel delivery idle switching point (6): rev/min (6)	cm³/1000 strokes (7)	Torque-control travel (5): rev/min (8)	Control rod travel mm (9)
1150	77,5 - 79,5	1190-1200*			100	119,0-129,0	1150	9,0-9,1
	(75,5 - 81,5)						800	9,5-9,6
							500	9,5-9,6
			800	80,5 - 82,5				
				(78,5 - 84,5)				
		Set control-rod stop to contact at 500 min/1						

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

(3) 2589 mit 1047 DL

Upper rated speed: Degree of deflection of control lever (1)	rev/min Control rod travel mm (2)	Control rod travel mm rev/min (1a) (2a)	Intermediate rated speed: Degree of deflection of control lever (4)	rev/min (5)	Control rod travel mm (6)	Lower rated speed: Degree of deflection of control lever (7)	rev/min (8)	Control rod travel mm (9) (3)	Sliding sleeve travel (1): rev/min (10)	mm (11)
max.	1150	15,2-17,8	-	-	-	ca. 11	100	min.7,5	300	1,2-1,3
							300	6,2-6,3	600	3,1-3,4
							620-680	=2,0	1190	8,5
ca.64	8,0	1190-1200								
	4,0	1230-1260								
	1350	0 - 1,0				330-410 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F) (2): rev/min (1)	cm³/1000 strokes (2)	Rotational speed limitation intermediate speed (2b): rev/min (4a) (3)	Fuel delivery characteristics high idle speed (5a): rev/min (4)	cm³/1000 strokes (5b) (5)	Starting fuel delivery idle switching point (6): rev/min (6)	(7)	Torque-control travel (5): rev/min (8)	Control rod travel mm (9)
1150	78,5 - 80,5	1190-1200*	800	83,0-86,0	100	116,5-126,5	1150	9,1+0,1
	(76,5 - 82,5)			(80,5-88,5)		(113,5-129,5)	500	9,6+0,1
						= 14,4-14,8 mm RW	895	9,4+0,2
							1030	9,1+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	(1) rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
max.	1190	15,2-17,8		-	-	-		ca.11	100	min. 7,7		300	1,2-1,3
									300	6,1-6,3		600	3,1-3,4
												1190	8,5
ca. 64	8,1	1190-1200											
	4,0	1225-1255											
	1350	0 - 1,0						320-425					
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F) (2)		(2b) Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	78,5 - 80,5	1190-1200*	800	83,0-86,0	100	116,5-126,5	1150	9,1+0,1
	(76,5 - 82,5)			(80,5-88,5)		(113,5-129,5)	500	9,6+0,1
							900	9,4+0,2
							1030	9,1+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

Tostoil-ISO 4113

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	(1) rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		(2b) Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

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WPP 001/4 KHD 6,1 h

5. Edition

En

PES 6 A 85 D 410 RS 2591 RS 325/1325 AOB 691 DL
AOC 691 DL

Komb.-Nr. 0 400 876 283

supersedes 11.82
company KHD
engine BF 6 L 913 - BW
124 kW (169 PS)
/ 2650 min-1

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1325	12,8-12,9	9,0-9,1	0,3(0,45)			
325	8,4-8,6	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

VH=Control lever Vertical position = 40°
FH=Accelerato lever Horizontal position = 40°

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				FHca.21	325	8,5	1325	12,8-12,9
						VH max.	100	min.10,0	1000	12,8-12,9
VHca.53	1365-1375=11,8						400 -	425= 6,0	850	12,9-13,1
FH	1415-1445= 4,0								500	12,9-13,1
(2a) max.	1575=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note changed to ...) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0,7 bar				
1325	90,5-91,5	1365-1375*	1000	85,0-88,0	100	104,0-114,0		
	(88,5-93,5)			(83,0-90,0)		=17,8- 18,2		
			LDA	0,7 bar		mm RW		
			850	83,5-86,5		(Electromagnet		
				(81,5-88,5)		24 V)		
		LDA 0 bar	500	55,5-58,5				
				(53,5-60,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

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BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

F23

D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min ~~increasing pressure~~ decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
2591 + 691 DL	0,70		12,9 - 13,1
		0,43	12,7 - 12,8
		0,28	12,1 - 12,3
		0	11,5 - 11,7

Notes

(1) when n rev/min and gauge pressure - bar (maximum full-load control rod travel)

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Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 V3 40

9. Edition

En

PES 6 A 90 D 410 RS 2596 RSV 575-1250 A 1 B 618 L

Komb.-Nr. 0 400 876 295 A 1 C 618 L

supersedes 2.82

company Daimler-Benz

engine OM 352 A 115 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC RW) = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	13,2+0,1	7,8-7,9	0,3(0,45)			
575	7,2-7,4	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.27	575	7,3	-	-
	X = 4,0						100	min. 19,0		
ca.58 (2a)	12,2	1250-1255					575	7,2-7,4		
	4,0	1274-1291					585-645	= 2,0		
	1445	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1230	77,5-78,5 (75,5-80,5	1250-1255*	-	-	100	80,0-90,0 (77,0-93,0) =16,0-16,6 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

G1

② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 RAB 9,7 b

3. Edition

En

PES 6 A 95 D 420 LS 2595 RQ 200/1100 AB 1094-1 R

Komb.-Nr. 0 400 846 514

supersedes 5.84

company: RABA

engine: D 2356 HM 6 U
162 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	12,1-12,3	0,3(0,6)			
200	6,0-6,2	0,8-1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550 VH =	19,2-20,8 max. 46°	550	20,0	10,3 4,0	1145-1160 1175-1205	200	6,0	100 200 310-400	min. 8,0 6,4-6,6 350=2,0 max.1,0	1100 500 750 855	11,3-11,4 11,9-12,0 11,7-11,9 11,5-11,7

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes Control rod travel mm 7
1100	121,0-123,0 (119,0-125,0)	500	800	119,0-125,0 (116,5-127,5)	100	17,5-18,1
			500	max. 117,0 (max. 119,)		

Checking values in brackets

9.84

G2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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(1A)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 5,7x3
3. Edition
En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2596 RSV 350-1400 A0B 1148 L
Komb.-Nr. 0 400 876 313

supersedes 6.83
company Daimler Benz
engine OM 352 A
115 kW (156 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) 2,00-2,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	11,3+0,1	7,1 - 7,2	0,3(0,45)			
350	7,9+0,2	0,9- 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 22	350	7,5	1380	11,3+0,1
	x =	5,0					100	min. 19	800	12,3+0,1
ca.66 (5)	1430-1440 =	10,3					350	7,9-8,1	1200	11,6+0,
	1510-1540 =	4,0					530-590 =	2,0		
	1620 =	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1380	0,7 bar 71,0-72,0 (69,0-74,0)	1430-1440*	LDA 700	0,7 bar 67,0-69,0 (64,5-71,5)	100	78,0- 88,0 bei 15,6- 16,0 mm RW		
			LDA 500	0 bar 58,0-59,0 (56,0-61,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

G3

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

63

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 2596 with AOB 1148 L	0,70		12,3-12,4
		0	11,8-11,9
		0,38	12,0-12,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at	0,4 - 0,5 bar
Unlocking at	0,15 - 0,25 bar

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 KHD 4,7 c
4. Edition

En

PES 5 A 80 D 410/3 RS 2603 RS 325/1650 A0B 2087 L
A0C 2087 L

Komb.-Nr. 0 400 865 023

supersedes 5,84
company KHD
engine F 5 L 912
54 kW (73 PS)
3000 min^{-1}
A power output

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 -2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1490	9,9-10,0	5,1-5,2	0,2(0,35)			
325	8,7-8,9	1,7-2,1	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	VHmax.	325	8,8	-	-
						FHca.18	100	min.13,6		
							325	8,7-8,9		
VHca.49	8,9	1690-1700		●			550	- 590=2,0		
FH	4,0	1740-1770					600	max.1,8		
(2a) max.	1900	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1490	50,5-51,5 (49,0-53,0)	1690-1700*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

G5

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Test Specifications Fuel Injection Pumps ② and Governors

PE8A95D 410 LS 2608 RQ 300/1250 AB 929 L

Komb.- Nr. 0 400 648 140

1-8-7-2-6-5-4-3 je 45° ±0,5° (±0,75°)

supersedes -

company: KHD

engine: F8L413 F
157 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,3-9,4	8,6-8,8	0,35(0,6)			
300	6,4-6,6	1,2-1,8	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking oil slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	8,3 4,0	1295-1310 1345-1375	300	6,5	100 300 410-450	min.8,0 6,4-6,6 =2,0	1250 650 945 1020	9,3-9,4 9,7-9,8 9,5-9,7 9,3-9,6

Torque-control travel on flyweight assembly dimension a = 0,40 mm

Speed regulation: At 1295-1310 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel mm cm³/1000 strokes 7
1250	85,5-87,5 (83,5-89,5)	-	750	78,5-81,5 (76,0-84,0)	-	-

Checking values in brackets

9.84

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 12,7 p

3. Edition

En

PE 8 A 95 D 410 LS 2608 RQV 300-1100 AB 1126 L

Komb.-Nr. 0 400 648 128

1-8-7-2-6-5-4-3 je 45° ± 0,5° (± 0,75°)

supersedes 5.84 KHD

company: F 8 L 413 F

engine: 133 kW/2200 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,5-9,6	8,8-9,0	0,35(0,6)			
300	5,9-6,1	0,9-1,9	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 14	100 300	min.7,5 5,9-6,1	250 530 820 1100	1,1-1,3 3,6-4,2 5,8-6,0 8,1
ca. 44	8,5 4,0 1345	1140-1150 1195-1225 0-1,0				355-415 (3a)				

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	88,0-90,0 (86,0-92,0)	1140-1150*	700	90,5-93,5 (88,0-96,0)	100	120,0-130,0 (117,0-133,0 = 14,0-14,4 mm RW	1100 500 825 975	9,5-9,6 0,1+0,1 9,9+0,2 9,6-9,9

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

G7

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 MWM 6,2 e 2

1. Edition

En

PES 6 A 90 D 320/3 RS 2660 RSV 325-1200 A0C 2182 R

Komb.-Nr. 0 400 866 114

supersedes
company MWM
engine TD 226 B-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,95-3,05 (2,90-3,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,0-9,1	7,5-7,6	0,3(0,45)			
325	7,4-7,6	2,6-3,4	0,25(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	325	7,0	1200	9,0-9,1
	x = 5,0						325	7,4-7,6	500	9,9-10,0
ca.51 (2a)	8,0	1240-1250					345-605	=2,0	860	9,5-9,7
	4,0	1300-1330								
	1465	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5) (4a) Idle stop: rev/min 8	Control rod travel mm 9
1200	74,5-75,5 (72,5-77,5)	1240-1250*	500	59,5-60,5 (57,5-62,5)	100	133,0-143,0 (130,0-146,0) =19,5-21,0 mm RW	0	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

9.84

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 o
4. Edition
En

Testoil-ISO 4113

PES 6 A 95 D 410 RS 2625 RSV 325-1150 A8B 674 DL A8C 674 L
Komb.-Nr. 0 400 876 305

supersedes 3.84
company: KHD
engine: B F 6 L 913 B Bagger

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 - 2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,4+0,1	8,0 - 8,2	0,3(0,6)			
325	7,2-7,4	1,6 - 2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 X =	0,3-1,0 3,0	-	-	-	ca. 15	325	6,8	1150 500 1000	11,4+0,1 12,1+0,1 11,8+0,2
							325	7,2-7,4		
(5) ca. 50	10,4 4,0 1325	1190-1200 1265-1295 0,3 - 1,7					585-645 = 2,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 80,0 - 82,0 (78,0 - 84,0)	1190-1200*	LDA 800	0,7 bar 83,0-86,0 (80,5-88,5)	100	116,5-126,5 (113,5-129,5) = 15,9 - 16,4 mm RW		
			LDA 500	0 bar 56,5 - 59,5 (54,5 - 61,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

G9

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 6 A..RS 2625 with.. A8B 674 DL .. A8C 674 L	0,7		12,2 - 12,3
		0	11,1 - 11,2
		0,36	11,9 - 12,0
		0,2	11,1 - 11,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VAU 5,4 a 1

1. Edition

En

PES 6 A 95 D 320 RS 2646
Komb.-Nr. 0 400 846 533

RQV 300-1300 AB 1163-1 R

supersedes
company Vauxhall
engine 330 T/C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
810	9,7-9,8	6,4-6,6	0,35(0,6)			
300	5,9-6,1	0,8-1,4	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1440	15,2-17,8	-	-	-	ca. 17	100	min.7,4	275	0,9-1,1
							300	5,9-6,1	500	3,1-3,5
ca. 61	8,7	1350-1360							1000	5,7-5,8
	4,0	1455-1485							1300	8,0
	1600	0-1,0				350-490 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
810	63,5-65,5 (61,5-67,5)	1350-1360*	1200	71,5-74,5 (69,5-76,5)	100	86,5-96,5 (83,5-99,5) = 19,5-21,0 mm RW	-	-
			500	52,0-55,0 (50,0-57,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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G11

GAA

② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,4 h

1. Edition

En

PES 6 A 95 D 410 LS 2669
Komb.-Nr. 0 400 846 523

RQ 750 AB 1172 L

supersedes -
company: MAN
engine: D 2566 ME
114 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC) Zyl. 6; RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1+0,1	11,8-12,0	0,35(0,6)			
250	5,9-6,1	0,9-1,5	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,0 4,0	750-755 775-785	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
700	118,0-120,0 (116,0-122,0)	-	-	-	-	-

Checking values in brackets

9.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

G12

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 8,0 o

1. Edition

En

PES 5 A 95 D 410 RS 2680 RQV 300-1150 AB 1088-1 L

Komb.-Nr. 0 400 845 080

supersedes

company KHD

engine F 5 L 413 FRW
85 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,1	7,2-7,4	0,35(0,6)			
300	6,4-6,6	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ①: rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 12	100	min.8,0	250	0,5-0,8
ca. 58	8,0	1190-1200					300	6,4-6,6	550	2,9-3,1
	4,0	1235-1265							850	4,7-5,0
	1350	0-1,0				315-425			1150	7,9
						③a				

Torque control travel a = 1,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1150	72,0-74,0 (70,0-76,0)	1190-1200*	600	80,5-83,5 (78,0-86,0)	100	115,0-125,0 (112,0-128,0 = 14,0-14,6 mm RW	1150	9,0-9,
			650 **	98,5-101,5 (96,0-104,0)			500	10,4+0,
							800	10,0+0,
							1000	9,2-9,

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Adjusted with the full-load stop unblocked. Solenoid switched off.

8.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

G13

Test Specifications Fuel Injection Pumps and Governors

① WPP 001/4 KHD 9,6 m
1. Edition
En

PES 6 A 95 D 410 RS 2681 RQV 300-1150 AB 1088-1 L
Komb.-Nr. 0 400 846 530

supersedes –
company: KHD
engine: F 6 L 413 FRW
102 kW
Tunnelling or mining vehicles

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,1	7,9-8,1	0,35(0,6)			
300	6,4-6,6	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca.12	100	min.8,0	250	0,5-0,8
							300	6,4-6,6	550	2,9-3,2
ca.58	8,0	1190-1200							850	4,7-5,0
	4,0	1230-1260							1150	7,9
	1350	0-1,0				310-450 (3a)				

Torque control travel a = 0,7 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1150	79,0-81,0 (77,0-83,0)	1190-1200*	650	80,5-83,5 (78,0-86,0)	100	120,0-130,0 (117,0-133,0)	1150	9,0-9,1
							650	9,7-9,8
							800	9,5-9,7
							1000	9,0-9,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 LIE 5,6 a

1. Edition

En

PES 4 A 95 D 410 RS 2685 RSV 400-1000 A 1 C 2187 L

Komb.-Nr. 0 400 874 238

supersedes -

company Liebherr

engine D 904 NA 70 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,7-9,8	7,9-8,1	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
oose	800	0,3-0,7	-	-	-	ca. 23	400	5,7	1000	9,7-9,8
.	x = 2,5						400	6,1-6,3	550	9,7-9,9
ca. 50	8,7	1040-1050					455-5	5=2,0	430	10,9-11,5
(2a)	4,0	1065-1095								
	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40° C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	79,0-81,0 (77,0-83,0)	1040-1050*	600	66,5-69,5 (64,0-72,0)	100	125,0-135,0 (122,0-138,0) =15,5-15,7 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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615

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,2 d
2. Edition
En

Test-No. 415

PES 4 M 55 C 320 RS 152-1
RSF 375/2250 M 56

Komb.Nr. 0 400 074 963/ Sales model 0 400 074 962

1- 3- 4 - 2
0-90-180-270

supersedes 4.84
company Daimler-Benz
engine OM 601
54 kW
U.S.A.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Note: Before starting testing, observe the e important instructions on the reverse.

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Control rod travel RW = 20,0-22,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,1+0,1	3,4-3,5	0,25(0,3)			
375	6,4-6,6	0,5-0,6	0,10(0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm 2	rev/min 3	4	mm 5	rev/min 6	7	rev/min 8	mm 9
8-12° (1)	min.12,5	250	50° (7)	12,3-12,5	2200	(12)	100	min. 20,6
(2)	6,4-6,6	375	(8)	8,8-9,2	2500	(13)	1800	12,7-12,9
(3)	**	400	(9)	-		(14)	1000	13,1-13,2
(4)	-		(10)	0-1,0	2950			
(5)	2,5	630-730	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery idle		Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2200	36,0-38,0 (35,0-39,0)	2500* 8,8-9,2	1800	36,0-37,5 (35,0-38,5)	100	min. 55	6,0 (12a)
					375	5,0-6,0 (4,5-9,0)	1,0 (1,5) (15)
			1000	34,0-35,0 (33,0-36,0)	2500	21,0-25,0 (20,0-26,0)	2,5 (3,0) sieht Pkt. 8 a (16)

Checking values in brackets

ca. 1 mm less control rod travel than in Column 2

6.84

1. ** Adjust the idle speed auxiliary spring at N = 400 min^{-1} in such a way that the control-rod travel is overpressed by 0.1 - 0.2 mm.

2. Adjusting the idle control lever position

   At 1000 min^{-1}, control-rod travel 1.9 - 2.0 mm.

3. Checking the idle speed auxiliary spring cut-off

   Control lever position 46°. After the switchoff point (from the starting curve) up to 1000 min^{-1}, no change in control-rod travel. Control lever position 30°. Rotational speed range 600-800 min^{-1}, control-rod travel 10.0 mm.

4. Checking the pneumatic shut-off unit

   Control lever at idle stop.

   n = 375 min^{-1} and pu = 450 mbar (vacuum) (338 mm Hg), the control-rod must move quickly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351

6. * Offsetting (difference) of start of fuel delivery between the maximum/minimum value 1° camshaft.

7. Adjust idle on the pneumatic idle speed boost box. In so doing release the lock nut.

8. Adjusting the pneumatic idle speed boost (PLA):

   At 0.4 bar vacuum, n = 425 min^{-1}, control-rod travel 8.0 - 9.6 mm (11-19 ccm/1000 strokes).

9. Checking for leaks (checking vacuum) in the PLA box

   Trigger the PLA box with 0.8 bar vacuum via the three-way valve and pressure gauge. Using the 3-way valve, cut off the vacuum supply from the PLA and pressure gauge. Allowable pressure drop 30 mbar in 15 s.

10. FBG Adjustment

    FBG adjustment and interlocking according to the average value for start of delivery from all cylinders, 19.5 ± 0.2 (0.3) ° camshaft after cyl. 1.

11. Checking the regulator using the altitude-pressure compensator aneroid box

Rotational speed (min^{-1})	Pressure (absolute) (mbar)	Control deviation from max. Control-rod travel (mm)
1 000	840	1.0 - 1.2 (0.95 - 1.25)
1 000	930	0.0 - 0.4 (0.0 - 0.45)
1 000	700	2.1 - 2.5 (2.05 - 2.55)

12. Pin projection = 16.55 ± 0.55 mm

G17

Test Specifications Fuel Injection Pumps and Governors

WPP 00 1/4 MB 3,0 m

En 3. Edition

PES 5 MW 55/320 RS 16
RW 375/2200 MW 28-1
0 403 245 013
0 403 245 014 - Sales model

supersedes 11.82
company Daimler Benz
engine OM 617 A

Note: Before starting testing, observe the important instructions on the reverse.
Use overflow valve 1 417 413 012

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC) Control rod travel

ohne ALDA (2,05-2,25) 19,5-22,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,5+0,1	5,15 - 5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,10(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

ohne ALDA

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
27-31	①	min.11	100	69	⑦	12,1-12,3	2180	⑫		
	②	max.11	320		⑧				100	20,5-21,5
	③	5,7-5,8 **	365		⑨	11,2	2300-2320	⑬		
	④	-	-		⑩	4,0	2620-2720	⑭	1600	13,1-13,3
	⑤	-	-		⑪	0,0-1,0	2950		1000	13,5-13,6
								⑥ Switching point	260-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

ohne ALDA

Full-load delivery ⑲ Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0	⑫a
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	1,0 (1,5)	⑮
					375	(5,5-9,5)++	(1,5)	
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0)	⑯

Checking values in brackets

* 1 mm less control rod travel than in Column 2

8.84

MB 3.0 m

Testing with ALDA

Point	min^{-1}	cm^3/1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5 (50,5-53,5)	13,5 - 13,6	1733 mbar (1300 mmHg)
18a	*** 1000	41,0-43,0 (40,0-44,0	-	1067 mbar (800 mmHg)
19	2180	50,0-52,0 (49,0-53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle 69°. Drive injection pump at 1000 min^{-1}. Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min^{-1}. Control-rod travel 8.8 - 9.5 mm must be reached.

2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at n = 800 min^{-1}. Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

3. Setting the idle auxiliary spring (70)

** Set the idle auxiliary spring so that it just touches at n = 520 - 550 min^{-1} at the end of the characteristic curve.

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4. Setting the sensing lever

Move the control lever to the full-load stop.
Drive the injection pump at n = 375 min^{-1}. Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at n = 1000 min^{-1}.

5. *** Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction ± 0.75 mm control-rod travel.

6. Pin projection = 16.65 ± 0.1 mm.

7. Stop - check: Drive the injection pump at n = 200 min^{-1}. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.

8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at n = 375 min^{-1}. At Pu = 450 bar (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm.

9. Range of adjustment idle - full load = 38 - 42°.

10. ** Idle checking point.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,o t
2. Edition
En

PES 5 MW 55/320 RS 16 RW 375/2200 MW 28-3
0 403 245 020
0 403 245 021 - Sales model

supersedes 2.83
company Daimler-Benz
engine OM 617 A-USA
92 kW (125 PS)

Note: Before starting testing, observe the important instructions on the reverse.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC)

Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1.
Control rod travel

ohne ALDA 19,5-22,5

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15-5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,1 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

ohne ALDA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
27-31 (1)	min.11	100	69 (7)	12,1-12,3	2180	(12)	100	20,5-21,5
(2)	max.11	320	(8)	11,2	2300-2320	(13)	1600	13,1-13,3
(3)	5,7-5,8	365	(9)	4,0	2620-2720	(14)	1000	13,5-13,6
(4)	**		(10)	0,0-1,0	2950			
(5)	-	-	(11)	-	-		Switching point	
	-	-				(6)	260-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

ohne ALDA

Full-load delivery (19) Test oil temp 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		
							Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0 (12a)
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	1,0 (1,5) (15)
					375	(5,5-9,5) ++	(1,5)
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0) (16)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

6.84

Testing with ALDA

Point	min^{-1}	cm^3/1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5 (50,5-53,5)	13,5 - 13,6	1733 mbar (1300 mmHg)
18a	*** 1000	41,0-43,0 (40,0-44,0	-	1067 mbar (800 mmHg)
19	2180	50,0-52,0 (49,0-53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle 69°. Drive injection pump at 1000 min^{-1}. Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min^{-1}. Control-rod travel 8.8 - 9.5 mm must be reached.

2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at n = 800 min^{-1}. Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

3. Setting the idle auxiliary spring (70)

** Set the idle auxiliary spring so that it just touches at n = 520 - 550 min^{-1} at the end of the characteristic curve.

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4. Setting the sensing lever

Move the control lever to the full-load stop.
Drive the injection pump at n = 375 min^{-1}. Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at n = 1000 min^{-1}.

5. *** Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction ± 0.75 mm control-rod travel.

6. Pin projection = 16.65 ± 0.1 mm.

7. Stop - check: Drive the injection pump at n = 200 min^{-1}. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.

8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at n = 375 min^{-1}. At Pu = 450 bar (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm.

9. Range of adjustment idle - full load = 38 - 42°.

10. ** Idle checking point.

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4
2. Edition
En

Testoil-ISO 4113

PES 6 A 100 D 410 RS 3020 EP/RSV 400-1100 A 7 B 700 L

superseded 10.74
company John Deere
engine 6404 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC); Port closing mark 14° after port closing.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,3				
	6	3,2 - 4,2				
	12	12,4 - 13,4				
200	9	4,0 - 5,2				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 66	1100	12,0				ca. 26	400	6,3	1080	0
	1120	6,2	without auxoliary spring				150	19 - 21		
							400	6,0-6,6		
	1100	11,5-12,5					430	3,0-4,6	-	-
(5)	1140	2,0- 5,0					500	0 - 1		
	1240	0,3- 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1080	107,5-109,5	1110-1120 *			100	15,6-17,6	400	11,5-15,5
			1150	11,5 - 21,5			cm³	/ 1000

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.75

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 t 1
2. Edition
En

PES 5 MW 55/320 RS 16 RW 375/2200 MW 29-1

0 403 245 022
0 403 245 023 - Sales model

supersedes 9.82
company Daimler-Benz
engine OM 617A-USA
92 kW (125 PS)

Note: Before starting testing, observe the important instructions on the reverse.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1.

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) Control rod travel 19,5-22,5

ohne ALDA

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15-5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,1 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

ohne ALDA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
27-31 (1)	min.11	100	69 (7)	12,1-12,3	2180	(12)	100	min. 55
(2)	max.11	320	(8)	11,2	2300-2320	(13)	1600	13,1-13,3
(3)	5,7-5,8	365	(9)	4,0	2620-2720	(14)	1000	13,5-13,6
(4)	**		(10)	0,0-1,0	2950			
(5)	-	-	(11)	-	-		Switching point	
						(6)	280-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

ohne ALDA

Full-load delivery (19) Test oil temp 40° C (104 F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery idle		Difference	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes	
1	2	3	4	5	6	7	8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0	6,0	(12a)
					365	10,0-11,0	1,0	
			1000	51,5-52,5 (50,5-53,5)		(8,5-12,5)	(1,5)	(15)
					375	(5,5-9,5)++	(1,5)	
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0)	(16)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

6.84

Testing with ALDA

Point	min^{-1}	cm^3/1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5 (50,5-53,5)	13,5 - 13,6	1733 mbar (1300 mmHg)
18a	*** 1000	41,0-43,0 (40,0-44,0	-	1067 mbar (800 mmHg)
19	2180	50,0-52,0 (49,0-53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle 69°. Drive injection pump at 1000 min^{-1}. Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min^{-1}. Control-rod travel 8.8 - 9.5 mm must be reached.

2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at n = 800 min^{-1}. Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

3. Setting the idle auxiliary spring (70)

** Set the idle auxiliary spring so that it just touches at n = 520 - 550 min^{-1} at the end of the characteristic curve.

H2

4. Setting the sensing lever

Move the control lever to the full-load stop.
Drive the injection pump at n = 375 min^{-1}. Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at n = 1000 min^{-1}.

5. *** Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction ± 0.75 mm control-rod travel.

6. Pin projection = 16.65 ± 0.1 mm.

7. Stop - check: Drive the injection pump at n = 200 min^{-1}. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.

8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at n = 375 min^{-1}. At Pu = 450 bar (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm.

9. Range of adjustment idle - full load = 38 - 42°.

10. ** Idle checking point.

H3

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 VOL 4,5 g

2. Edition

En

PES 4 MW 100/320 RS 1102
RSV 300-1000 MW 1 A 315 0 403 474 001

supersedes 7.84
company Volvo
engine TD 45
84 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) bei RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
700*	12,1+0,1	11,3-11,5	,35(0,6)			
300	5,6-5,7	1,3-1,7	0,35(0,55)			
1000	12,1+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 12	300	5,1-5,2		
							300	5,6-5,7		
ca. 52 (2a)	11,1	1040-1050					360-420	2,0		
	4,0	1055-1085								
	0,3-1,7	1200								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	113,0-115,0 (111,0-117,0)	1040-1050*	1000	112,0-116,0 (110,0-118,0)	300	13,0-17,0 (10,5-19,5)	300	5,6-5,7

* At the minimum full-load stop, set a control-rod travel of 12.6-12.7 mm with n = 1000 min/1. At the maximum full-load stop, make the full-load adjustment according to test specifications.

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

H4

Test Specifications Fuel Injection Pumps and Governors

WFP 001/4 MB 3,0 t 2
2. Edition
En

Testoil-ISO 4113

PES 5 MW 55/320 RS 16-1 RW 375/2200 MW 28-3
0 403 245 025
0 403 245 026- Sales model

supersedes 4.84
compan Daimler-Benz
engine OM 617 A-USA
92 kW (125=PS)

Note: Before starting testing, observe the important instructions on the reverse.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1.

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) 19,5-22,5 Control rod travel

ohne ALDA

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,5+0,1	5,15-5,25	0,25 (0,3)			
365	5,7-5,8	1,0-1,1	0,1 (0,15)			
1600			0,25 (0,3)			
2180			0,25 (0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

ohne ALDA

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
27-31 ①	min. 11	100	69 ⑦	12,1-12,3	2180	⑫	100	20,5-21,5
②	max. 11	320	⑧			⑬		
③	5,7-5,8	365	⑨	11,2	2300-2320	⑭	1600	13,1-13,3
④	**		⑩	4,0	2620-2720		1000	13,5-13,6
⑤	-	-		0,0-1,0	2950		Switching point	
	-	-	⑪	-	-	⑥	260-310	(240-330)

C. Settings for Fuel Injection Pump with Governor Mounted

ohne ALDA

Full-load delivery ⑲ Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0 ⑫a
					365	10,0-11,0	1,0
			1000	51,5-52,5 (50,5-53,5)		{ 8,5-12,5)	(1,5) ⑮
					375	{ 5,5-9,5)++	(1,5)
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0) ⑯

Checking values in brackets

* 1 mm less control rod travel than in Column 2

6.84

Testing with ALDA

Point	min^{-1}	cm^3/1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0 - 11,0 (8,5 - 12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300 Suppl. 2, Ed. 2.

Set the control lever to an angle of 69^o. Operate the fuel-injection pump at 1000 min^{-1}.
Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49^o. Operate the fuel-injection pump at 1000 min^{-1}. Control-rod travel 8,8 - 9,5 must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300 Suppl. 2, Ed. 2.

Operate the fuel-injection pump at n = 800 min^{-1}. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at n=520-550 min^{-1}.

4. Adjusting the sensing lever

Place the control lever against the full-load stop.
Operate the fuel-injection pump at n = 375 min^{-1}. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at n = 1000^{-1}.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm$ 0.75 mm control-rod travel.

6. Pin projection = 16.65 $\pm$ 0.1 mm

7. Shutoff check: Operate the fuel-injection pump at n = 200 min^{-1}. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at n = 375 min^{-1}. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = 38 - 42°.

10. **Testing and setting of control-rod travel sensor with evaluation circuit K5/EES - RWG.00 RBN - 40**

Receiving inspection:

Set control lever so that a voltage of 2.1 ± 0.005 V is indicated on the digital voltmeter.

Set engine speed of 1000 1/min; fuel delivery of 27.5 - 28.5 ccm/1000 lifts must be reached. Control lever at full-load stop (control-rod travel 13.5 - 13.6), voltage value 3.2 ± 0.08 V.

Setting the control-rod travel sensor:

At 1000 1/min set a fuel delivery of 27.5 - 28.5 ccm/1000 lifts with control lever. Move control-rod travel sensor until U = 2.1 ± 0.005 V is indicated (tighten fastening screws to 3 Nm). Control lever at full-load stop (control-rod travel = 13.5 - 13.6); voltage of 3.2 ± 0.04 V must be reached.

11. ** Idle checking point

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 k
3. Edition
En

Testoil-ISO 4113

PES 5 MW 55/320 RS 20
RW 375/2200 MW 27 0 420 081 017

1 - 2 - 4 - 5 - 3 = 0 - 72-144-216-288±0,5 (0,75)

supersedes 9.79
company Daimler Benz
engine OM 617

Note: Before starting testing, observe the important instructions on the reverse. see Point 3
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) 21,0 mm Control rod travel

ohne ADA

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,2+0,1	3,8 - 3,9	0,25(0,3)			
375	6,6-6,8	0,6 - 0,7	0,1(0,15)			
1600	Abschn.	C. Sp. 4-5	0,25(0,3)			
2180	Abschn.	C. Sp. 4-5	0,25(0,3)			

Set uniform delivery according to the values in [ ] Checking values in brackets

B. Governor Settings

ohne ADA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm 2	rev/min 3	4	mm 5	rev/min 6	7	rev/min 8	mm 9
30 ①	11,0	100-300	67 ±2 ⑦	12,4+0,2	2180	⑫	100	20,5-21,5
②	6,6-6,8	375	⑧	11,5	2280-2300	⑬	1600	13,0-13,2
③	**	385	⑨	4,0	2670-2730	⑭	1000	13,2-13,3
④	-	-	⑩	0-1,0	2950			
⑤	2,0	650-700	⑪	-	-	⑥	Switching point 250-300(230-320)	

C. Settings for Fuel Injection Pump with Governor Mounted

ohne ADA

Full-load delivery ⑲ Test oil temp 40°C (104°F)		Full-load speed regulation ⑧a	Variations in fuel delivery ⑰ ⑱		Starting fuel delivery idle		
							Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2180	39,0 - 41,0 (38,0 - 42,0)	2280-2300* (2275-2305)	1600	39,0 - 41,0 (38,0 - 42,0)	100	mind. 57	6,0 ⑫a
			1000	38,5 - 39,5 (37,5 - 40,5)	375	6,0-7,0 (5,5-7,5)	1,0 (1,5) ⑮
					2550	14,5 - 20,5 (13,5 - 21,5)	2,5 (3,0) ⑯

Checking values in brackets

* 1 mm less control rod travel than in Column 2

5.82

H9

1. Testing of sections A, B and C should be done without the ADA aneroid box. When this test has been completed the ADA aneroid box is connected.

Testing the governor with ADA-aneroid box (147)

Engine speed	Setting point	Control-rod travel reduction from full-load control-rod travel
1000 min^{-1}	840 mbar (630 mm Hg)	1,0 - 1,2 (0,95 - 1,25) mm
	Checking point	
1000 min^{-1}	907 mbar (680 mm Hg)	0,3 - 0,6 (0,35 - 0,65) mm

2. Pin projection = 16.65 $\pm$ 0.05 mm.

3. Adjusting the idle stage

Text replaces section 4.1 of the test instructions.

Set the control lever to 30°.

Operate the fuel-injection pump at n = 800 min^{-1}.

Screw the spring retainer (torque-control capsule) or the driver with a pin wrench KDEP 1064/1 or a 1/2" hexagon-socket-screw-key so far that a control-rod travel of 1.2 - 1.5 mm is attained.

Further test steps see Test Instructions VDT-W-420/300 En.

4. ++ At this engine speed exceed the control-rod travel by 0.4 $\pm$ 0.1 mm. Idle delivery must not be affected.

5. Adjustment angle: Stop...idle = 35°, idle...full load = 39°.

6. Sensing lever adjustment: Set the sensing lever at n = 375 min^{-1} (control lever in full-load position). At this speed the control-rod travel must exceed the full-load control-rod travel at n = 1000 min^{-1} by 0,1 - 0,3 (0,1-0,4 mm) mm.

7. Check the pneumatic shut-off:

Control lever in idle position. Operate the fuel-injection pump at n = 375 min^{-1}. At p_u = 450 mbar (338 mm Hg) (vacuum) the control rod must quickly return to control-rod travel 0 mm.

H10

H10

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 12,7 c

5. Edition En

PE 8 MW 100/720 LS 1010 RQV 300-1250 MW 31

Komb. 0 403 548 003

superseded 1.82

company: KHD

engine: BF 8 L 413 F
235 kW (320 PS)
bei 2500 min

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) bei RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,2+0,1	13,0-13,2	0,35(0,6)			
300	6,4-6,6	1,25-1,65	0,35(0,55)			
850	12,7+0,1		0,5 (0,7)			
500	9,7+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1250 1500	15,2-17,8 0-1,0				ca. 15	100 300	min.8,4 6,8-6,9		
ca. 65	11,2 4,0	1290-1300 1375-1405				380-440 (3a)	670-730=2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b): rev/min (4a) 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 130,0-132,0 (128,0-134,0)	1290-1300*	LDA 850	0,7 bar 130,5-134,5 (128,5-136,5)	100	136,5-146,5 (133,5-149,5)	850 1000 1200	12,7+0, 12,4+0,2 12,2+0,1
			LDA 500	0 bar 84,5-86,5 (82,5-88,5)	300	12,5-16,5 (10,0-19,0)	1250	12,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

H11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
LS 1010 with MW 31	0,7 bar	0,3 0,23	12,7 - 12,8 11,9 - 12,0 10,4 - 10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8,1 c 1
4. Edition

En

PES 6 MW 100/720 RS 1012 RQV 425-1100 MW 35
0 403 446 126
1- 5- 3 - 6 - 2 - 4
0-60-120-180-240-300 ± 0,50 (0,75)

supersedes 12.83
company: OM-Brescia
engine 8365.25.522
122 kW (152 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2+0,1	8,15-8,35	0,35(0,6)			
425	5,8-6,0	1,05-1,45	0,35(0,55			
700	11,1+0,1		0,5 (0,7)			
500	10,6+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 14	425	5,8-6,0	425	1,8
	1300	0 - 1,0					100	min. 7,5	500	2,3-2,9
									1150	9,0-9,2
ca. 48	9,2	1140-1150								
	4,0	1185-1215				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9+0,1
LDA	0,5 bar		LDA	0,5 bar	100	RW max. 19	700	11,1
1100	81,5-83,5 (79,5-85,5)	1140-1150*	700	84,5-88,5 (82,5-90,5)		min.160 (min.157)		
			LDA 500	0 bar 67,5-69,5 (65,5-71,5)	425	10,5-14,5 (8,0-17,0)	1000	10,2
					100-345 (80-365)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1012 with	0,25		10,9 - 11,0
RQV...MW35		0,5	11,1 - 11,2
		0	10,6 - 10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8,1 c

3. Edition

En

PES 6 MW 100/720 RS 1012 RQV 425-1000 MW 36-1

supersedes 8.83

0 403 446 133

company: OM Brescia

engine: 8365.25.530

121,4 kW (165 PS)

1 - 5 - 3 - 6 - 2 - 4

0 - 60 - 120 - 180 - 240 - 300 ± 0,5 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC) RW 9 - 12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,7+0,1	9,1-9,3	0,35 (0,6)			
425	6,4-6,5	1,35-1,75	0,5 (0,55)			
700	12,6+0,1		0,5 (0,7)			
500	11,5+0,1		0,35 (0,6)			

Adjust the fuel delivery from each outlet according to the values in [redacted].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever ③a 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1100 1200	15,2-17,2 0-1,0	-	-	-	ca. 26	425 100	6,4-6,5 min.8,0	425 500 1050	1,8 2,3-3,0 8,6-8,7
ca. 51	10,7 4,0	1040-1050 1120-1150					490-550 = 2,0			

Torque control travel a = 1,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9 +0,1
LDA 1000	0,6 bar 91,0-93,0 (89,0-95,0)	1040-1050 *	LDA 700	0,6 bar 100,0-104,0 (98,0-106,0)	100	RW 19-21 160,0-180,0 (157,0-183,0)	500 700 800	12,6 12,6 12,4
			LDA 500	0 bar 71,5-73,5 (69,5-75,5)	425 100-345	13,5-17,5 (11,0-20,0 (80-365)	950 1000	11,7 11,7

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

H15

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

HAS

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1012 with	0,36		12,2 - 12,3
RQV-MW 36-1		0,6	12,6 - 12,7
		0	11,5 - 11,6
		0,31	11,8 - 11,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5 g
En 2. Edition

Testoil-ISO 4113

PES 6 MW 90/720 RS 1015 RQV 300-1600 MW 49
0 403 446 146

supersedes 11.83
company: IVECO-Fiat
engine: 8062.24.668
140 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,4+0,1	7,6 - 7,8	0,35 (0,6)			
375	6,6-6,7	1,0 - 1,4	0,35(0,55)			
1600	10,4+0,1		0,5 (0,7)			
500	8,9-9,0					

Adjust the fuel delivery from each outlet according to the values in [ ].

* Note: Idle adjustment must be made at 375 min/1. The rotational speed n = 300 min/1 has been shown on the name plate.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1640 1900	15,2-17,8 0-1,0				ca. 16	375 100	6,6-6,7 min.9,0		
ca. 63	9,4 4,0	1640-1650 1770-1800				③a	390-880			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1000	0,5 bar 76,0-78,0 (74,0-80,0)	1640-1650*	LDA 1600	0,5 bar 82,0-86,0 (80,0-88,0)	200	160,0-180,0 (157,0-183,0)		
			LDA 500	0 bar 42,5-44,5 (40,5-46,5)	375	10,0 - 14,0 (9,0-15,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

H17

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1015 with	0,5		10,4 - 10,5
RQV...MW 49		0	8,9 - 9,0
		0,21	10,0 - 10,1
		0,18	9,3 - 9,4

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 RVI 5,5 a

3. Edition

En

40

Testoil ISO 4113

PES 6 MW 80/320 RS 1104
RSV 300-1450 MW 2/801
0 403 476 013

supersedes 1.84
company RVI
MD 060212
engine 97,8 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,75-1,85 (1,70-1,90) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
900	10,4-10,5	5,05-5,25	0,25(0,4)			
300	4,7-4,9	0,85-1,15	0,2(0,35)			
1450	9,4-9,5		0,35 (0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

Note: Adjuste the idle speed auxiliary spring touching, then turn back 1/4 turn

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 4,0		ca. 20	300	4,8	900	10,4-10,5
					250	max. 6,4	1050	10,0-10,2
ca. 58 (2a)	8,4	1515-1525					1450	9,4-9,5
	3,9	1555-1585					1150	9,6-9,8
	0-1,0	1650						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
900	50,5-52,5 (49,5-53,5)	1515-1525	* 1425	54,0-56,0 (52,0-58,0)	100	max. 15 mm RW 75,0-85,0 (70,0-90,0)		
					300	8,5-11,5 (7,0-13,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H19

Test Specifications Fuel Injection Pumps and Governors

(1) PP 001/4 RVI 8,8 K 3
1. Edition
En

PES 6 MW 100/320 RS 1016
RQV 300-1300 MW 25-3
0403 446 144
1- 5- 3- 6- 2- 4
0-60-120-180-240-300 ± 0,50 (0,75)

supersedes
company RVI
engine: MIDS 060212
107 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,5+0,1	8,25-8,45	0,35(0,6)			
300	5,7-5,8	0,95-1,35	0,35(0,55)			
900	10,5+0,1		0,5 (0,7)			
500	9,7-9,8					

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min / Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1300	15,2-17,8				ca.12	300	5,7-5,8		
	1650	0 - 1,0					200	min. 6,9		
ca. 61	9,5	1360-1370								
	4,0	1475-1505					325-600			
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 82,5-84,5 (80,5-86,5)	1360-1370*	LDA 900	0,7 bar 79,5-83,5 (77,5-85,5)	100	95,0-105,0 (90,0-110,0)		
			LDA 500	0 bar 54,5-56,5 (52,0-59,0)	300	9,5-13,5 (7,0-16,0)		
					100-220	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

H20

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrustung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1016			10,5 - 10,6
with MW 25-3	0,7	0,12	10,1 - 10,2
		0,10	9,8 - 9,9
		0	9,7 - 9,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 4,5 K
1. Edition

En

PES 4 MW 100/320 RS 1116
RQV 300-1100 MW 51
0 403 444 108

1- 3- 4 - 2
0-90-180-270 ± 0,50 (0,75)

supersedes
company Volvo-BM
TD 45-EM
engine 85 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	2,5+0,1	11,6-11,8	0,35(0,6)			
300	5,8-5,9	1,3-1,7	0,35(0,55)			
1000	2,5+0,1		0,55			
700	0,5+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ①: rev/min 10	mm 11
max.	1150 1350	5,2-17,8 0-1,0				ca. 12	300	5,8-5,9		
ca. 52	11,5 4,0	140-1150 200-1230				③a	330-450			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 700	0,75 bar 116,0-118,0 (114,0-120,0)	1140-1150*	LDA 1000	0,75 bar 117,0-121,0 (114,5-123,5)	100 300	130,0-140,0 (127,0-143,0) 13,0-17,0 (10,5-19,5)		
			LDA 700	0 bar 79,0-81,0 (76,5-83,5)	100-230(80-250)			

Checking values in brackets

* 1 mm less control rod travel than col 2

10.84

H22

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 700 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1116 with MW 51	0,75		12,5 - 12,6
		0,52	12,4 - 12,5
		0,26	10,6 - 10,7
		0	10,5 - 10,6

Notes

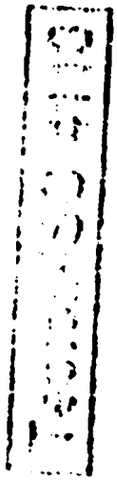
(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 12,7 t

1. Edition

En



PE 8 MW 100/720 LS 1117
RQ 300/1000 MW 52-1
0 403 548 009

supersedes
company KHD
engine F 8 L 413 F 2
177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,4+0,1	10,6-10,8	0,35 (0,6)			
300	7,5-7,6	1,1-1,5	0,35 (0,55)			
1150	10,0+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	19,2-20,8	550	20,0	9,0	1195-1210	300	7,5	100	min. 9,0	1150	10,0-10,1
				4,0	1240-1270			300	7,5-7,6	650	11,4-11,5
1350	0 - 1,0							350-380	= 2,0	850	10,5-10,8

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
650	106,0-108,0 (104,0-110,0)		1150	96,0-98,0 (93,5-100,5)	100	130,0-140,0 (127,0-143,0)
					300	11,0-15,0 (8,5-17,5)
					100-230	(80-250)

Checking values in brackets

10.84

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 13,4 a
2. Edition
En

PE 8 MW 100/720 LS 1118
RQV 300-1150 MW 56
0 403 548 007

supersedes 8.84
company KHD
engine BF 8 L 513
222 kW

1- 8- 7- 2 - 6 - 5 - 4 - 3
0-45-90-135-180-225-270-315 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,2+0,1	13,3-13,5	0,35(0,6)			
300	8,7-8,8	1,6-2,0	0,35(0,55)			
1150	13,6+0,1		0,5 (0,7)			
450	13,2+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1175 1400	15,2-17,8 0-1				ca. 22	300	6,7-6,8		
ca. 55	12,6 4,0	1190-1200 1300-1330				(3a)	320-650			

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 700	0,8 bar 133,0-135,0 (131,0-137,0)	1190-1200*	LDA 1150	0,8 bar 129,0-131,0 (126,5-133,5)	100	140-150 (137-153)	1000 750	3,6+0,1 4,2+0,1
			LDA 450	0 bar 104,0-106,0 (101,5-108,5)	300	16,0-20,0 (13,5-22,5)	900	3,8+0,3
					100-230	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

J1

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

J1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
Pumpe LS 1118	0,8		14,2 - 14,3
with MW 56		0,36	13,9 - 14,0
		0,26	13,4 - 13,5
		0	13,2 - 13,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,8 a 1
3. Edition
En

Testoil-ISO 4113

PE 6 P 110 A 720 RS 15 RQ 250/1100 PA 111 DR
Komb.-Nr. 0 401 846 194

supersedes 3.82
company Daimler-Benz
engine OM 355
154 kW (210 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1090	12,0+0,1	10,0 - 10,2	0,3 (0,6)			
250	7,9-8,1	1,7 - 2,3	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,5-16,5	600	16,0	11,0 4,0 1300	1135-1150 1210-1240 0 - 1,0	250	6,0	100 250 385-425	mind. 7,0 5,9-6,1 = 2,0	1090 700 450	12,0-12,1 12,3-12,4 12,6-12,7

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: A 1135 - 1150 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/100 strokes 7
1090	100,0 - 102,0 (98,0 - 104,0)		700 450	96,0 - 99,0 (94,0 - 101,0) 90,0 - 94,0 (88,0 - 96,0)	100	150,0-170,0 (146,0-174,0)

Checking values in brackets

5.84

J3

J3

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4
1. Edition
En

Testoil-ISO 4113

PES 8 P 100 A 921/5 RS 286
.. 920/5 RS 286/34

EP/RSV 350-1050 PO/392 DR
350-1200 PO/394 DR
350-1050 PO/409 DR

supersedes
company: IHC - USA
engine: DVT 800

s. WPP 110/2, 3. Ausgabe !
1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45° !

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) Checking tolerance +.0,15 -0,05

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,4 - 12,0	0,4			
600	15	16,2 - 17,8				
200	6	2,9 - 3,9				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings P 0/392 DR

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 49	1050	16,0	without auxoliary spring			ca. 26	350	6,0	1030	0
	1150	10,3					150	19 - 21		
	1230	3,9					350	5,7-6,3	450	1,1-1,3
(5)	1050	ca. 9,0	with auxiliary spring				460	0 - 1		
	1150	ca. 3,0								
	1200	0,3 - 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1050	69,0 - 71,0	1100-1110*	800	91,0 - 95,0	100	190 - 230		
					350	8 - 11		
			1145	5,0 - 11,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

J4

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

J4

B. Governor Settings

P 0/394 DR

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 64	1200	16,0	without auxoliary spring			ca. 34	350	6,0	1200	0
	1350	9,4					150	19 - 21		
	1450	3,2					350	5,7-6,3		
ca. 55	1200	ca. 8,6	with auxiliary spring				540	0 - 1	500	0,5-0,7
(5)	1310	ca. 3,0								
	1400	1,0-2,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
1200	65,5 - 67,5	1250-1260 *	850	76,5 - 80,5	100	190 - 230		
					350	8 - 11		
			(6a) 1310	5,0 - 17,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

P 0/409 DR

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 45	1050	16,0	without auxiliary spring			ca. 29	350	6,0	1030	0
	1120	11,0					150	19 - 21		
	1190	4,2					350	5,7-6,3		
ca. 44	1050	ca. 9,8	with auxiliary spring				380	3,5-4,8	500	1,3-1,5
(5)	1150	ca. 3,8					420	1,0-2,0		
	1250	1,0-2,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
1050	81,5 - 83,5	1090-1100 *	750	103,5 - 107,5	100	190 - 230		
					350	8 - 11		
			1150	5,0 - 17,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

J5

J5

En

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 STE 10,0 C
5. Edition

En

Testoil-ISO 4113

PE 8 P 110 A 221 LS 331 RQV 250-1300 PA 315 DR

1 - 5 - 4 - 8 - 6 - 3 - 7 - 2 je 45°!

supersedes 5.80
company Steyr
engine WD 815.60 (320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) Checking tolerance + 0,15 -0,05

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
1300	13,1-13,2	13,1 - 13,3	0,4			
250	7 - 8	1,0-2,0	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 66	1320	15,0-17,6	-	-	-	ca.10 (3a)	100	6,2-7,6	200	0,5-1,2
	1400	7,2-12,2					250	4,8-6,1	450	2,9-2,5
	1460	1,0-7,6					400	1,8-3,2	1000	5,4-5,8
	1560	0					660	0	1320	8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,5 bar		LDA	bar				
1300	131,0-133,0	1330-1345 *	1300	112,0-116,0	100	15,0 - 17,0		
	(increase by ± 3,0 cm³)							

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

J6

J6

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
331 with 315 DR	0,245	0,14	- 0,1 - 1,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,4 1 12
1. Edition
En

PES 6 P 110 A 820 LS 442 RQ 300/1100 PA 691-1
Komb.-Nr. 0 402 046 306

supersedes –
company Daimler-Benz
engine OM 407 H
177 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	12,5-12,7	0,4(0,8)			
300	7,7-7,9	1,3- 1,9	0,4(0,7)			
600	-	C, Sp 4 u. 5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	10,3 4,0 1350	1130-1140 1175-1215 0-1,5	300	7,8	100 300 365-4	min.9,4 7,7-7,9 05=2,0	-	-

Torque-control travel on flyweight assembly dimension a = – mm

Speed regulation: At 1130-1140 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	125,0-127,0 (122,5-129,5)	-	600	110,0-114,0 (107,0-117,0)	100	130.0-150,0 (126,0-154,0) ** See page 2

Checking values in brackets

7.84

** The controller is equipped with a starting device that depends upon the temperature (TAS).

Instructions for adjusting the starting flow:

Adjust the starting flow without the TAS with the control-rod plug cap. Then put on the TAS and adjust a control.rod travel of 11.8 - 11.9 mm at room temperature.

J9

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 14,9 c 1

1. Edition

En

PES 8 P 120 A 320 RS 466 RQV 275-1050 PA 665-1
Komb.-Nr. 0 402 048 043
1-8-4-2-7-3-6-5 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company RVI
engine MIVS 083530
280 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Port closing mark 13° after port closing cylinder 1

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	9,7-9,8	19,0-19,2	0,5(0,9)			
275	3,3-3,5	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 9	200	min.5,1	275	1,5-1,6
ca. 64	8,7	1105-1115					275	3,3-3,5	450	3,4-3,8
	4,0	1175-1205							800	5,8-6,0
	1300	0-1,0				280-400 ③a			1050	7,7

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1050	0,7 bar 190,0-192,0 (187,0-195,0)	1105-1115*	LDA 650	0,7 bar 172,0-178,0 (169,0-181,0)	100	135,0-155,0 (131,0-159,0)	-	-
			LDA 500	0 bar 116,0-118,0 (113,0-121,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

J10

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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J10

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 8 P..RS 466 + RQV..PA 665-1	0,70	0 0,20 0,16	9,7-9,8 7,8-7,9 9,2-9,3 8,3-8,5

Notes

(1) when n rev/min and gauge pressure = bar (maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 12,8k
2. Edition
En

Testoil-ISO 4113

PE 8 P 100 A 320 LS 810 RSV 575-1200P1/820
Komb.-Nr. 0 401 878 098 PMA 820
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5°(±0,75°)

supersedes 10.79
compan Daimler-Benz
engine OM 402
(147,1kW-200PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	9,6-9,7	8,6 - 8,8	0,3(0,6)			
575	5,2-5,4	0,5 - 0,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 x = 6,0		-	-	-	ca.28	575	5,3	-	-
ca.54 (2a)	1215-1225 = 8,6 1245-1260 = 4,0 1350 = 0,3-1,						575 580-640	5,2-5,4 = 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1180	86,0 - 88,0 (84,0 - 90,0)	1215-1225*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

J12

J12

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 12,8 b 3

1. Edition

En

PE 8 P 100 A 320 LS 810 RQV 300-1250 PA 227 R

Komb.-Nr. 0 401 848 041

supersedes-
company: Daimler-Benz
engine: OM 402

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,3+0,1	10,0-10,2	0,3(0,6)			
300	7,4-7,6	1,7-2,3	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca. 12 (3a)	100 300 630-690	min.9,0 7,4-7,6 = 2,0	250 550 850 1250	0,7-1,0 3,3-3,5 4,7-5,1 8,0
ca. 66	9,3 4,0 1450	1290-1300 1330-1360 0-1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2a) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1250	100,0-102,0 (98,0-104,0)	1290-1300*	600	75,0-80,0 (72,5-82,5)	100	120,0-140,0 (116,0-144,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 9,6 b

7. Edition

En

PE 6 P 100 A 320 LS 818 RSV 350-1250 PO/810
Komb.-Nr. 0 401 876 183

1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° ±0,5° (±0,75°)

supersedes 12.83
company Daimler-Benz
engine OM 401
141 kW (192 PS) (1)
129 kW (175 PS) (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1230	10,3+0,1	10,2-10,4	0,3(0,6)			
350	7,2-7,4	1,4-2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 34	350	7,3	-	-
	x =						350	7,2-7,4		
ca. 62 (2a)	9,3	1280-1290					500-560	= 2,0 **		
	4,4	1360-1380								
	1400	0,3-1,7								

Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40 °C (104 °F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1230 (1)	102,0-104,0 (100,0-106,0)	1280-1290*	-	-	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.63	1250 1350 1450	14,0 8,7 2,8	without auxiliary spring			ca. 31	350	5,9	-	-
ca.60	1250 1360 1430	ca.10,8 ca. 4,4 0,3-1,0	with auxiliary spring				100 350 450 500	19-21 5,6-6,2 0,9-3,1 0-1,0		
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)								Control rod travel mm
rev/min	cm³/1000 strokes	Note changed to rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
1230 (2)	93,0-95,0 (91,0-97,0)	1280-1290*	- (6a)	-	100	110,0-130,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)								Control rod travel mm
rev/min	cm³/1000 strokes	Note changed to rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

(1A)

J15

J15

En

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 12,8 c 1
2. Edition

En

PE 8 P 100 A 320 LS 819 RSV 350-1250 P0/810
Komb.-Nr. 0 401 878 085 P0A 810

supersedes
company Daimler-Benz
engine OM 402 256 PS

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4 -3,5 (3,35 -3,55) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1230	10,2+0,1	10,0-10,2	0,3(0,6)			
350	7,4-7,6	1,5- 2,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 x = 5,0	0,3-1,0	-	-	-	ca.38	350	7,5 **	-	-
ca.66 (2a)	9,2 5,0 1450	1260-1270 1330-1350 0,3 - 1,4					500-560	=2,0		

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, test oil temp 40 °C (104 °F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1230	100,0-102,0 (98,0-104,0)	1260-1270*	-	-	100	110,0-130,0 (106,0-134,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 12,8 n
4. Edition
En

Testoil-ISO 4113

PE 8 P 100 A 320 LS 819 RSV 350-1250 PO/822
POA 822
8 - 7 - 2 - 6 - 3 - 5 - 4 - 1 je 45° ± 0,5° (± 0,75°)
Komb.-Nr. 0 401 878 107

superseded 7.83
company Daimler-Benz
engine OM 402
165 kW (224 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4 - 3,5 (3,35-3,55) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	9,6-9,7	8,7 - 8,9	0,3(0,6)			
350	7,5-7,7	2,1 - 2,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.31	350	7,6	1230	9,6+0,1
	x = 4,5						**		1050	9,9+0,2
(5) ca.58	8,6	1270-1280					450-5	10 = 2,0	850	10,3+0,2
	4,0	1330-1345								
	1450	0,3 - 1,4								

** Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1230	87,0-89,0 (85,0-91.0)	1270-1280*	800	84,0-88,0 (82,0-90,0)	100	110 - 130	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

J17

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 19,1 k

5. Edition

En

PE 12 P 110 A 320 LS 832 RQV 350-1150 PA 476 R

Komb.-Nr. 0 401 840 060

supersedes 12.83

company: Daimler-Benz

engine: OM 404 A

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testing 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC) Zyl. 12; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,8+0,1	13,4-13,6	0,4(0,8)			
350	7,4-7,6	1,4-2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.18	100	min.8,6	300	0,9-1,1
ca.66	11,8	1185-1195					350	7,0-7,2	580	3,5-3,8
	4,0	1295-1325					615-675	= 2,0	870	5,2-5,5
	1450	0-1,0				③a			1150	7,8

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1185-1195*	LDA	0 bar	100	130,0-150,0	1130	12,8+0,1
	134,0-136,0		500	121,0-123,0		(126,0-154,0)	700	13,1+0,1
	(131,5-138,5)			(118,5-125,5)			970	13,0+0,1
			LDA	0,7 bar			1070	12,8+0,1
			700	135,0-139,0				
				(132,0-142,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

J18

BOSCH

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 12 P...LS 832 + RQV..PA 476 R	0,70		13,1 - 13,2
		0	12,4 - 12,5
		0,39	12,9 - 13,0
		0,31	12,5 - 12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 16,0 g 1
1. Edition

En

PE 10P100A320 LS 821-1 RQV 350-1250 PA 378-2
Komb.-Nr. 0 401 849 167

supersedes
company Daimler-Benz
engine OM 403
235 kW

1 - 8 - 7 - 6 - 3 - 5 - 1 -10 - 9 - 4
0 - 27 -72-99-144-171-216-243-288-315° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	10,1+0,1	9,7-9,9	0,3(0,6)			
350	7,4-7,6	1,5-2,1	0,2(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca.14	100	min.9,2	300	0,9-1,1
ca.66	9,1	1290-1300					350	7,6-7,8	620	3,6-3,9
	4,0	1360-1390							930	5,3-5,6
	1500	0-1,0				420-540			1250	8,3
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1230	97,0-99,0 (95,0-101,0	1290-1300*	1230	75,0-77,0 (73,0-79,0) **	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

** Adjusted at the inner lever of the reduced-delivery stop

9.84

J20

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 19,1 m1
4. Edition

En

PE 12 P 110 A 320 LS 832 RQV350-1150 PA 493 R

supersedes 2.83
company Daimler-Benz
engine OM 404 A
386 kW (525 PS)

Komb.-Nr. 0 401 840 067

1 - 5-9- 8 - 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0 -15-60-75-120-135-180-195-240-255-300-315° ±0,5°(±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,4 (3,15-3,35) mm (from BDC) Zyl.12; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	13,1±0,1	14,0-14,2	0,4 (0,8)			
350	7,5-7,7	1,8- 2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	Sliding sleeve travel 1: rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca.18	100	min.8,6	300	1,0-1,2
ca.66	12,1	1185-1195					350	7,0-7,2	600	3,6-3,9
	4,0	1295-1325					690-750	= 2,0	850	5,2-5,4
	1450	0 - 1,0				3a			1150	8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed 2b: rev/min 4a 3	Fuel delivery characteristics high idle speed 5a 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point 6: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9
LDA 1130	0,7 bar 140,0-142,0 (137,0-145,0)	1185-1195*	LDA 500	0 bar 121,0-123,0 (118,0-126,0)	100	130,0-150,0 (126,0-154,0)	-	-
			LDA 1130 **	0,7 bar 99,0-103,0 (96,0-106,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

J21

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

MB 19,1 m 1

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PF 12 P.. LS 832 + .. PA 493 R	0,70		13,1-13,2
		0	12,3-12,4
		0,40	12,9-13,0
		0,33	12,5-12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

** Adjusted at the inner lever of the reduced-delivery stop

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 g
1. Edition

En

US-PES 6 P 110 A 720 RS 3083 US-RSV 400-1050 P2/488-1

supersedes –

company John Deere
engine 6466 A

Komb.-Nr. 9 400 231 175

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,45-3,55 (3,40-3,60) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,5-11,1	14,8-15,0	0,4(0,75)			
400	5,9-6,1	1,4-2,0	0,4(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca.22	400	5,5	1050	11,5-11,6
	X=						100	min.19,0	700	12,3-12,6
ca.44	10,5	1095-1105					400	5,9-6,1	500	9,8- 9,9
(2a)	4,0	1170-1200					625-685	=2,0		
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	1,2 bar	1095-1105*	LDA	1,2 bar	100	160,0-190	0 400	6,0
1050	147,5-149,5		700	160,0-166,0				
**	(144,5-152,5)			(158,0-168,0)				
			LDA	0 bar				
			500	99,0-103,0				
				(96,0-106,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

J23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
US-PES6P..RS3083 +US-RSV..P2/488-1	0,50		11,9-12,0
		0,26	10,3-10,7

Notes

(1) when n rev/min and gauge pressure bar (maximum full-load control rod travel)

** Setting without a compensating spring retainer at 1 mm contro-rod travel less. Boosting of the full load fuel delivery with the compensating spring retainer to 11.5 mm control-rod travel.

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 9,6 n
1. Edition

En

PES 6 P 110 A 720 RS 3104 RQ 900 PA 738
Komb.-Nr. 0 402 046 759

supersedes-
company: KHD
engine: BF 6 L 413 FR/C

Test-oil: SO 413

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,6+0,1	14,7-14,9	0,4(0,75)			
300	6,7-6,9	1,3-1,9	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,6 5,5 1050	900-905 936-945 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 900-905 min-1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
850	147,0-149,0 (144,0-152,0)	-	-	-	-	-

Checking values in brackets

9.84

K1

KA

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 y
2. Edition

En

PE 6 P 110 A 720 RS 3115 RQV 200-1100 PA 468

superseded 6.83

company Saab Scania

engine DN 11 01

Komb.-Nr. 0 401 846 764

Please note instructions on sheet 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 stroke 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,4+0,1	11,9-12,1	0,5(0,8)			3,3±0,1 (3,0-3,5)
225	5,4-5,6	2,0-2,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca. 11 ③a	100 225 330-390	min.6,9 5,4-5,6 =2,0	150 470 780 1100	0 -0,3 3,6-4,2 5,6-5,8 8,3
ca. 61	11,4 4,0 1400	1140-1150 1250-1280 0 - 1,0								

Torque control travel e = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed rev/min ④a 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
600	119,0-121,0 (117,0-123,0)	1140-1150 *	1100	119,5-124,5 (117,0-127,0)	100	230,0-280,0 = 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

BOSCH

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SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 22, 1983
- Start of fuel delivery-engine: 21° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

K3

K3

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 SCA 11,0 y 1
2. Edition
En

PE 6 P 110 A 720 RS 3115 RSV 350-1100 P 1/481

supersedes 6.83
company Saab-Scania
engine DN 1101

Komb.-Nr. 0 401 876 728

Please note instructions on sheet 2.

Test-oil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,4±0,1	11,9-12,1	0,5(0,8)			3,3±0,1 (3,0-3,5)
350	5,4-5,6	2,0-2,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 30	350	5,0	-	-
	X = 5,75									
ca. 66	11,4	1140-1150					350	5,4-5,6		
(2a)	4,0	1210-1240					480-540	= 2,0		
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
600	119,0-121,0 (117,0-123,0)	1140-1150*	1100	119,5-124,5 (117,0-127,0)	100	230,0-280 = 20,0-21 mm RW	0 - 0	-

Checking values in brackets

* 1 mm less control rod travel than col 2

8,84

K4

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 22, 1983
- Start of fuel delivery-engine: 21° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

K5

K5

Test Specifications Fuel Injection Pumps ② and Governors

PE 8 P 110 A 320 LS 3802 RQ 300/1150 PA 187-4
Komb.-Nr. 0 401 848 714

supersedes 9.83
company: Daimler-Benz
engine: OM 422
184 kW (250 PS)

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ± 0,5° (± 0,75°)

See Service Information VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) 4,00-4,10 mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,6+0,1	10,9-11,1	0,4(0,8)	11,6+0,1	11,3-11,5	
300	8,3-8,5	1,1-1,7	0,4(0,7)	8,3-8,5	1,1-1,7	
	* with return throttle (1)			* without return	throttle (2)	

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,2-14,0	650	13,6	10,6 4,0 1350	1190-1205 1235-1265 0-1,0	300	7,7	100 300 410-450	min.9,3 7,6-7,8 =2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1190-1205 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm^3/-1000 strokes 2	rev/min 3	rev/min 4	cm^3/-1000 strokes 5	rev/min 6	Control rod travel cm^3/1000 strokes / mm 7
1150 (1)	109,0-111,0 (106,0-114,0)	600	600	94,0-98,0 (91,0-101,0)	100	130,0-150,0

Checking values in brackets

8.84

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	13,2-14,0	650	14,0	10,6 4,0 1350	1190-1205 1235-1265 0-1,0	300	7,7	100 300 410-450	min.9,3 7,6-7,8 =2,0	-	-

Torque control travel on flyweight assembly dimension a - mm Speed regulation At 1190-1205 min^{-1} ① 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1150 (2)	113,0-115,0 (110,5-117,5)	600	600	94,0-98,0 (91,0-101,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque control travel on flyweight assembly dimension a mm Speed regulation At ① 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

K7

En

147

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 21,9 f

1. Edition

En

PE 12 P 120 A 320 LS 3825 RQV 350-1050 PA 693

1 - 5 - 9 - 8- 3 - 4 - 11- 10- 2- 6- 7- 12
0 - 15 - 60 - 75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company: Daimler-Benz

engine: OM 424 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	9,7-9,8	14,8-15,0	0,5(0,9)			
350	4,5-4,7	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca.12	100	min.6,2	300	1,0-1,2
							350	4,5-4,7	550	3,4-3,6
ca. 58	8,7	1085-1095							800	4,8-5,0
	4,0	1165-1195							1050	7,1
	1300	0-1,0				③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1050	0,7 bar 148,0-150,0 (145,0-153,0)	1085-1095*	LDA 600	0,7 bar 146,0-152,0 (143,0-155,0)	100	150,0-170,0 (146,0-174,0)	-	-
			LDA 500	0 bar 128,0-130,0 (125,0-133,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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K8

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 12 P..LS 3825 +RQV..PA 693	0,70	0 0,36 0,32	9,7-9,8 9,3-9,5 9,5-9,6 9,4-9,6

Notes

(1) when n = rev/min and gauge pressure = bar (maximum full-load control rod travel)

K9

K9
En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 a 3
4. Edition
En

Testoil-ISO 4113

PE 8 P 120 A 920/4 LS 7002 RQV 250-1000 PA 547
1-2-7-3-4-5-6-8 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes 5.83
company: Scania
engine DS 14 06

Komb.-Nr. 0 402 648 801

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke: ab FD 141: 5,0 - 5,1 (4,95 - 5,15) bis FD 052: 4,4 - 4,5 (4,35 - 4,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,2+0,1	18,7 - 18,9	0,6(0,9)			3,3 ± 0,1
225	4,9-5,1	1,0 - 1,4	0,3(0,6)			(3,0 - 3,5)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca. 10	100	min. 5,9	200	1,0-1,2
ca. 60	12,2	1040-1050					225	4,4-4,6	470	3,3-3,8
	4,0	1150-1180					310-370	=2,0	730	5,1-5,3
	1000	0 - 1,0				(3a)			1000	7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	0,9 bar	1040-1050*	LDA	0,9 bar	100	240,0-290,0	-	-
700	187,0-189,0 (184,0-192,0)		1000	183,0-191,0 (181,0-193,0)		bei 20,0-21,0 mm RW		
			LDA 500	0 bar 137,0-141,0 (135,0-143,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

K10

KA0

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
..LS 7002 RQV..PA 547	0,9 bar	0 bar 0,23 bar 0,35 bar	13,2 - 13,3 11,3 - 11,4 11,9 - 12,1 12,8 - 12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDI-1-400/116
- For sealing, see VDI-1-400/117
- Test specifications approved by Scania on Aug. 19.8.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 2,9 - 3,1 mm.

K11

KAA

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 a 1

3. Edition

En

PE 8 P 120 A 920/4 LS 7002 S RQV 250-1050 PA 547

1 - 2 - 7 - 3 - 4 - 5 - 6 - 8 je 45°±0,5°(±0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

superseded 1.83

company Saab-Scania

engine DS 1407

Komb.-Nr. 0 402 648 802

Testbench 13

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ab FD 141: 5,0-5,1 (4,95-5,15) bis FD 052: 4,4-4,5 mm (4,35-4,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	18,3-18,5	0,6(0,9)			3,3±0,1
225	4,4-4,6	1,0-1,4	0,3(0,6)			(3,0-3,5) * *

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1050	15,2-17,8	-	-	-	ca. 10 (3a)	100 225 310-370	min.5,9 4,4-4,6 =2,0	200 500 800 1050	1,0-1,2 3,9-4,4 5,6-5,8 7,7
ca. 62	12,0 4,0 1350	1090-1100 1195-1225 0-1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 183,0-185,0 (180,0-188,0)	1090-1100*	LDA 1000	0,9 bar 176,0-184,0 (174,0-186,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 137,0-141,0 (135,0-143,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.84

K12

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 8 P .. LS 7002 +RQV .. PA 547	0,90	0 0,35 0,23	13,0-13,1 11,3-11,4 12,8-12,9 11,9-12,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 19.8.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

K13

n K13

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 SCA 14,2 e

2. Edition

PE 8 P 120 A 920/4 LS 7002-1 RSV 350-1050 P 1/504 En

supersedes 1.84

company Saab-Scania

engine DS 14 42

Komb.-Nr. 0 402 678 801

1-2-7-3-4-5-6-8 je 45° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Please note instructions on sheet 2.

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC) RW=9,0-12,0 mm

Test oil T3

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
700	13,2+0,1	18,7-18,9	0,6(0,9)			
350	4,4-4,6	1,4-1,8	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca.30	350	4,0	-	-
	x =	6,0					350	4,4-4,6		
ca. 64 (2a)	12,2	1090-1100					440-500	= 2,0		
	4,0	1160-1190								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5) (4a) Idle stop: rev/min 8	Control rod travel mm 9
700	187,0-189,0 (184,0-192,0)	1090-1100*	1050	183,0-191,0 (181,0-193,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

K14

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Okt. 5, 1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

K15

K15

② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 14,2 b 1
4. Edition

En

PE 8 P 120 A 920/4 LS 7003 RQ 750 PA 528
1 - 2 - 7 - 3 - 4 - 5 - 6 - 8 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes 5.83
company Saab-Scania
engine DS 14 41, DSI14 42
Komb.-Nr. 0 402 648 803

Please note instructions on sheet 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-ISO 413

A. Fuel Injection Pump Settings

Port closing at prestroke: ab FD 141: 5,0 - 5,1 (4,95-5,15) bis FD 052: 4,4 - 4,5 mm (4,35-4,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,8+0,1	18,7 - 18,9	0,6 (0,9)			3,3 ± 0,1 (3,0 - 3,5) **

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,8 4,0 850	750-755 784-797 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 750 - 755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	187,0-189,0 (184,0-192,0)	-	-	-	100	240,0-290,0 = 20,0 - 21,0 mm RW
			High idle speed			
			Dispersion:	4,0 (7,0)		

Checking values in brackets

9.84

K16

KA6

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 19, 1983
- Start of fuel delivery-engine: DS 14-18° before TDC; DSI 14-17° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

K17

K17

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 SCA 14,2 b
3. Edition

En

PE 8 P 120 A 920/4 LS 7003 RQ 900 PA 528

supersedes 5.83

company Saab-Scania

engine DS 14 41, DSI14 42 DSI14 43

Komb.-Nr. 0 402 648 804

1-2-7-3-4-5-6-8 je 45° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Please note instructions on sheet 2.

Testöl ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke: ab FD 141: 5,0-5,1 (4,95-5,15) bis FD 052: 4,4-4,5 (4,35-4,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,8±0,1	18,6-18,8	0,6 (0,9)			3,3 ±0,1 (3,0-3,5) **

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,8 4,0 1000	900-905 941-955 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 900-905 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
850	186,0-188,0 (183,0-191,0)	-	-	-	100	240,0-290,0 = 20,0-21,0 mm RW

High idle speed

Dispersion: 4,0 (7,0)

Checking values in brackets

9.84

K18

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 19, 1983
- Start of fuel delivery-engine: DS 14-18° before TDC; DSI 14-17° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

K19

K19

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 14,2 b 2
3. Edition

En

PE8P 120A 920/4 LS 7003 RQ 1050 PA 528
1-2-7-3-4-5-6-8 je 45° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes 5.83
company Saab-Scania DS 14 41, DSI 14 43
engine Komb.-Nr. 0 402 648 805

Please note instructions on sheet 2.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

- Port closing at prestroke ab FD 141: 5,0-5,1 (4,95-5,15) bis FD 052: 4,4-4,5 mm (4,35-4,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,8±0,1	19,9-20,1	0,6(0,9)			3,3 ±0,1 (3,0-3,5) **

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,8 4,0 1150	1050-1055 1098-1113 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1050-1055 mm^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1000	199,0-201,0 (196,0-204,0)	-	-	-	100	240,0-290,0 = 20,0-31,0 mm RW
			High idle speed Dispersion:	4,0 (7,0)		

Checking values in brackets

9.84

K20

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 19, 1983
- Start of fuel delivery-engine: DS 14-18° before TDC; DSI 14-17° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

K21

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PE 6 P 120 A 720 RS 7004 RQ 750 PA 528

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes 5.83

company SAAB-SCANIA

engine DS 1143, 44, 45
DSI11 42, 45

Komb.-Nr. 0 402 646 803

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ab FD 141: 5,00-5,10 (4,95-5,15) bis FD 052: 4,40-4,50 (4,35-4,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
700	12,8+0,1	20,9 - 21,1	0,6 (0,9)			3,3 ± 0,1 ** (3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,8 4,0 850	750-755 784-797 0 - 1,0	-	-	-	-	-	-

Torque control travel on flyweight assembly dimension a mm

Speed regulation At 750-755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/100 strokes 7
700	209,0 - 211,0 (206,0 - 214,0)	-	-	-	100	240 - 290 = 20,0-21,0 mm RW
			High idle speed			
			Dispersion:	4,0 (7,0)		

Checking values in brackets

9.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-1-400/116
- For sealing, see VDT-1-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: DS 11-17° before TDC; DSI 11-16° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

K23

1423

PE 6 P 120 A 720 RS 7004 RQ 750 PA 528-1

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes

company SAAB-SCANIA

engine DN 11

Komb.-Nr. 0 402 646 815

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,00-5,10 (4,95-5,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,6+0,1	15,5-15,7	0,6(0,9)			3,3 ± 0,1 ** (3,0-3,5)

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 2,9-3,1 mm.

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	9,6 4,0 850	750-755 773-792 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	155,0-157,0 (152,0-160,0)	-	- High idle speed Dispersion:	- 4,0 (7,0)	100	240-290 = 20,0-21,0 mm RW

Checking values in brackets

9.84

K24

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 SCA 11,0 v 2
3. Edition

PE 6 P 120 A 720 RS 7004 RQ 900 PA 528 En

supersedes 5.83

company Saab-Scania

engine DS 11 43, 44, 45
DSI11 42, 45

Komb.-Nr. 0 402 646 804

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

Please note instructions on sheet 2.

Testoil-ISO #113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

ab FD 141: 5,0-5,1 bis FD 052: 4,4-4,5 mm

Port closing at prestroke (4,95-5,15) mm (from BDC) (4,35-4,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,8±0,1	20,7 - 20,9	0,6(0,9)			3,3 ±0,1 (3,0-3,5) **

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③ Control rod travel	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	mm 12
-	-	-	-	11,8 4,0 1000	900-905 941-955 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 900-905 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
850	207,0-209,0 (204,0-212,0)	-	-	-	100	240,0-290,0 = 20,0-21,0 mm RW
			High idle speed			
			Dispersion:	4,0 (7,0)		

Checking values in brackets

9.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

L1 L4

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: DS 11-17° before TDC; DSI 11-16° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

L2

L2

Test Specifications Fuel Injection Pumps and Governors

WPP 0J1/4 SCA 11,0 v 1
3. Edition
En

Testoil-ISO 4113

PE 6 P 120 A 720 RS 7004 RQ 1050 PA 528
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes 5.83
company Saab-Scania
DS 1143, DSI11 45
engine
Komb.-Nr. 0 402 646 805

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Please note instructions on sheet 2.

A. Fuel Injection Pump Settings

Port closing at prestroke — ab FD 141: 5,0-5,1 (4,95-5,15) mm (from BDC) — bis FD 052: 4,4-4,5 mm (4,35-4,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,8+0,1	21,4 - 21,6	0,6(0,9)			3,3 ± 0,1 (3,0-3,5) ••

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,8 4,0 1150	1050-1055 1098-1113 0 - 1,0	-	-	-	-	-	-

Torque control travel on flyweight assembly dimension a ____ mm

Speed regulation At 1050-1055 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/100 strokes 7
1000	214,0-216,0 (211,0-219,0)	-	- High idle speed Dispersion:	- 4,0 (7,0)	100	240 - 290 ≙ 20,0 - 21,0 mm RW

Checking values in brackets

9.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: DS 11-17° before TDC; DSI 11-16° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

L4

L4

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 SCA 11,0 w
2. Edition
En

PE 6 P 120 A 720 RS 7007 RQV 200-1000 PA 539-2
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes 5.83
company: Scania
engine: DSC 1101
LKW 112
Komb.-Nr. 0 402 646 812

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Please note instructions on sheet 2.

Test-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,5 - 4,6 (4,45-4,65) mm (from BDC) = RW 6,0 - 8,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,7+0,1	21,0-21,2	0,7(1,0)			3,3± 0,1
225	4,4-4,6	1,4-1,8	0,3(0,6)			(3,0-3,5) **

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1040	15,2-17,8	-	-	-	ca.10 (3a)	100	min.5,9	150	0,5-0,8
							225	4,4-4,6	430	3,1-3,6
ca. 62	13,7	1040-1050					310-370	= 2,0	720	5,1-5,4
	4,0	1165-1195							1000	7,9
	1300	0-1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b): rev/min (4a) 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 210,0-212,0 (207,0-215,0)	1040-1050 *	LDA 1000	0,9 bar 201,0-209,0 (199,0-211,0)	100	240,0-290,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 164,0-168,0 (162,0-170,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

L5

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE6P..RS 7007 +RQV..PA539-2	0,42	0,90 0 0,30	14,0 - 14,1 14,7 - 14,8 11,8 - 11,9 12,4 - 12,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-1-400/116
- For sealing, see VDT-1-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: 22° before TDC at control-rod travel= 6,0-8,0 mm
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 3,0 mm.

L6

L6

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 d

4. Edition En

PE 8 P 120 A 920/4 LS 7008 RQV 200-950 PA 547-1

supersedes 8.83
company Scania
engine DSC 1401
Komb.-Nr. 0 402 648 807

1 - 2 - 7 - 3 - 4 - 5 - 6 - 8 je 45° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,5-4,6 (4,45-4,65) mm (from BDC RW = 6,0 - 8,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	4,2+0,1	20,1-20,3	0,7(1,0)			3,3 ± 0,1
225	4,6-4,8	1,4-1,8	0,3(0,6)			(3,0 - 3,5) **

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	990	15,2-17,8	-	-	-	ca. 9	100	min.5,9	150	0,5-0,9
ca. 60	3,2	990-1000					250	4,4-4,6	420	3,0-3,5
	4,0	1115-1145					310-370	= 2,0	680	4,8-5,1
	250	0-1,0				(3a)			950	7,4

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 201,0-203,0 (198,0-206,0)	990-1000*	LDA 950	0,9 bar 194,0-202,0 (192,0-204,0)	100	250,0-300,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 156,0-160,0 (154,0-162,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

L7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 7008 + RQV..PA 547-1	0,90	 0 0,35 0,24	14,2 - 14,3 11,5 - 11,6 13,6 - 13,7 12,1 - 12,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: 22° before TDC at control-rod travel= 6,0-8,0 mm
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 3,0 mm.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 ROL 12,2 c

1. Edition

En

PE 6 P 120 A 720 RS 7012 RQV 250-1000 PA 714
Komb.-Nr. 0 402 646 820
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company: Rolls Royce
engine: Eagle 3
253 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,6+0,1	20,9-21,1	0,6(0,9)			3,3±0,1
250	4,4-4,6	1,3-1,7	0,3(0,6)			(3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca. 10	100	min.5,9	200	1,0-1,2
ca.60	12,6	1040-1050					250	4,4-4,6	470	3,4-3,9
	4,0	1160-1190					310-370	=2,0	730	5,2-5,4
	1300	0-1,0				(3a)			1000	7,9

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 209,0-211,0 (206,0-214,0)	1040-1050*	LDA 1000	0,9 bar 203,0-211,0 (201,0-213,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 160,0-164,0 (158,0-166,0)	250	13,0-17,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

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L9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure - bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 7012 +RQV..PA 714	0,90	0	13,6-13,7
		0,42	11,6-11,7
		0,29	12,8-12,9
			11,9-12,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

L10

En L10

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SCA 11,0 z 1

1. Edition

En

PE 6 P 120 A 720 RS 7013 RSV 350-1100 P 1/481

Komb.-Nr. 9 400 087 310

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes

company Saab-Scania Brasilien

engine D SE 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-Spec

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
100	15,0+0,1	26,3-26,5	0,6(0,9)			3,3±0,1
350	5,4-5,6	4,3-4,7	0,3(0,6			(3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 6,0	-	-	-	ca.30	350	5,0	-	-
ca.64 (2a)	14,0	1040-1050					350	5,4-5,6		
	4,0	1130-1160					480-540	=2,0		
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	263,0-265,0 (260,0-268,0)	1040-1050*	700	265,0-273,0 (261,0-275,0)	100	300,0-350 =20,0-21,0 mm RW	0 350	5,5

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

L11

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 31.7 g 1
1. Edition
En.

PE 8 ZWM 160 / 100 RS 2001
Komb.-Nr. 0 406 008 023
8- 4- 5- 6 - 3 - 1 - 2 - 7
0-45-90-135-180-225-270-315° ± 0,5° (± 0,75°)
Please note instructions on sheet 2.

Replaces -
Firm: MTU
Engine: 8 V 396-03
960 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Test oil ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6(2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm 3	min ⁻¹	Medium rated speed: Control lever flection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever de-flection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	Torque control: min ⁻¹ 10	Control-rod travel mm 11
-	-	-		-	-	-	-	-	-	-	-

Torque control travel a = - mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min ⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min ⁻¹ 3	Fuel-delivery characteristics min ⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min ⁻¹ 6	cm³/1000 strokes 7
Adjust according to the engine records-				-	-	-

Checking values in brackets

9.84

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Note:

The fuel-injection pump has a special control rod for the partial cutoff of certain cylinders.

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

Test specifications Fuel injection pumps and governors

PE 12 ZWM 160/100 RS 2003
Komb.-Nr. 0 406 000 008

Replaces –
Firm: MTU
Engine: 12 V 396-03
1440 kW

12- 9- 4- 5- 8 - 11- 2 - 3 - 10- 7 - 6 - 1
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (±0,75°)

Please note instruc-
tions on sheet 2.

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Zyl. 12

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	–
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3	min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever de-flection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
–	–	–		–	–	–	–	–	–	–	–

Torque control travel a = – mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
Adjust according to the engine records-			–	–	–	–

Checking values in brackets

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L14

Note:

The fuel-injection pump has a special control rod for the partial cutoff of certain cylinders.

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

L15

Test specifications Fuel injection pumps and governors

PE 6 ZWM 160/100 RS 2004
Komb.-Nr. 0 406 006 034

Replaces –
Firm: MTU
Engine: 6 V 396-03
720 kW

6- 1- 2 - 3 - 4 - 5
0-75-120-195-240-315° ± 0,5° (± 0,75°)
Please note instructions on sheet 2.

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm 3	min ⁻¹	Medium rated speed: Control lever deflection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	Torque control: min ⁻¹ 10	Control-rod travel mm 11
–	–	–		–	–	–	–	–	–	–	–

Torque control travel a = – mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min ⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min ⁻¹ 3	Fuel delivery characteristics min ⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min ⁻¹ 6	cm³/1000 strokes 7
Adjust according to the engine records-	–		–	–	–	–

Checking values in brackets

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L16

Note:

The fuel-injection pump has a special control rod for the partial cutoff of certain cylinders.

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

L17

Test specifications Fuel injection pumps and governors

PE 12 ZWM 160/100 RS 2005
Komb.-Nr. 0 406 000 009

12- 9- 4- 5- 8 - 11- 2 - 3 - 10- 7 - 6 - 1
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

Replaces -
Firm: MTU
Engine: 12 V 396-03
1440 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Please note instructions on sheet 2.

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Zyl. 12

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm 3	min ⁻¹	Medium rated speed: Control lever flection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever de-flection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	Torque control: min ⁻¹ 10	Control-rod travel mm 11
-	-	-		-	-	-	-	-	-	-	-

Torque control travel a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min ⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min ⁻¹ 3	Fuel-delivery characteristics: min ⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min ⁻¹ 6	cm³/1000 strokes 7
Adjust according to the engine records-			-	-	-	-

Checking values in brackets

9.84

L18

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Note:

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

L19

Test specifications Fuel injection pumps and governors

PE 8 ZWM 160/100 RS 2006
Komb.-Nr. 0 406 008 018

8- 4- 5- 6 - 3 - 1 - 2 - 7
0-45-90-135-180-225-270-315° ± 0,5° (± 0,75°)

Replaces -
Firm: MTU
Engine: 8 V 396-03
960 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Please note instruction on sheet 2.

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	-
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm min ⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	Torque control: min ⁻¹ 10	Control-rod travel mm 11
-	-	-	-	-	-	-	-	-	-	-

Torque control travel a = - mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min ⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min ⁻¹ 3	Fuel-delivery characteristics min ⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min ⁻¹ 6	cm³/1000 strokes 7
Adjust according to the engine records-						

Checking values in brackets

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L20

Note:

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

Test specifications Fuel injection pumps and governors

PE 8 ZWM 160/100 RS 2007
Komb.-No. 0 406 008 019

8- 1- 2- 4 - 5 - 6 - 3 - 7
0-45-90-135-180-225-270-315° ± 0,5° (± 0,75°)

Please note instructions on sheet 2

Replaces –
Firm: MTU
Engine: 16 V 396-03
1920 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

test:oil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever deflection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	Torque control: min ⁻¹ 10	Control-rod travel mm 11
–	–	–	–	–	–	–	–	–	–	–

Torque control travel a = – mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min ⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min ⁻¹ 3	Fuel-delivery characteristics min ⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min ⁻¹ 6	cm³/1000 strokes 7
Adjust according to the engine records-		–	–	–	–	–

Checking values in brackets

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L22

Note:

The fuel-injection pump has a special control rod for the partial cutoff of certain cylinders.

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

L23